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INSTITUTIONAL MORTALITY OF THE NEW-BORN

A REPORT ON TEN THOUSAND CONSECUTIVE BIRTHS AT THE SLOANE HOSPITAL FOR WOMEN, NEW YORK *

L. EMMETT HOLT, M.D.

AND

ELLEN C. BABBITT

NEW YORK

Much interest has recently been awakened in a study of infant mortality during the early weeks. The importance of such a study is evident for several reasons. According to the best recent statistics available, one-third of the deaths of the first year occur in the first month of life, and seven-eighths of these come in the first two weeks. Using our own statistics to supplement these, of 100 infant deaths during the first year, approximately

33 occur in the first month
28 occur in the first two weeks
22 occur in the first week
13 occur on the first day

This is a concrete statement of the problem of infant mortality from one point of view. While the campaign for the reduction of infant mortality has greatly lowered the deaths from diarrheal and nutritional diseases and has made some considerable impression on respiratory and contagious diseases, thus far it can hardly be said to have touched at all the causes of the large group of deaths in the first month. Finally, at no time of life is diagnosis so difficult and the records of vital statistics so unreliable in giving the exact causes of death as during the first month.

It was thought, therefore, that an analysis of a group of cases from an obstetric hospital would shed considerable light on several phases of the problem under discussion. The records of the Sloane Hospital for Women in New York have been kindly placed at our disposal by Professor Cragin for this study. These records are especially valuable for such an investigation as they are unusually complete and have been kept with great care.

While the number of cases analyzed is small when compared with the statistics of a large city, the hospital figures have the greatly added value of more accurate diagnosis and are in all respects much more reliable than records available from general vital statistics.

What is an average or normal mortality among 10,000 births? How do the general figures of the city compare with those of a special institution? How much of the general mortality of the first two weeks could be prevented by proper obstetrics? How much of it is due to malformations and unavoidable accidents of delivery — causes which are beyond the reach of usual or even extraordinary preventive measures? Some of these questions we hoped to answer.

Ten thousand consecutive confinements in the Sloane Hospital for Women have been analyzed for this paper. These occurred during a period of about six and one-half years, ending in October, 1913. They were divided as follows:

Abortions (fetus non-viable, less than 37.50 cm. in length)	253
Stillbirths (fetus viable, 37.50 cm. or over in length)	429
Living births	9,318
	10,000

The hospital receives but few waiting women; nearly all are admitted after labor has begun. Patients are regularly discharged on the fourteenth day, and complete mortality records are therefore possible only for this period. In many cases infants who were ill, not thriving or premature, were kept for a longer time and some interesting facts regarding hospital mortality during a period longer than fourteen days are presented in this report.

In our paper we have first followed the fortunes of the 9,318 infants born alive, and later have analyzed the stillbirths.

The total deaths occurring in the first fourteen days were 291, these being 3.1 per cent. of infants born alive. Of these, 159, or 54.6 per cent., occurred in infants born prematurely; 132, or 45.4 per cent., occurred in infants born at term. Prematurity must, therefore, be recorded as the largest single factor in infant mortality of this period.

The following tabulation gives the exact time of death in premature infants and those born at term:

	Premature	Full Term	Total
Died on first day	102	38	140
Died on second day	8	10	18
Died under one week	135	98	233
Died during second week	22	34	56

Of infants born alive, 1.5 per cent. died on the first day;[1] 2.5 per cent. under one week; 3.1 per cent. during fourteen days. Nearly one-half (48 per cent.) of the deaths of the first fourteen days were on the first day.

Curiously, a report by Kerness[2] from the Universitäts Frauenklinik, Munich, for four years, 1907-1911,

* Read before the American Association for the Study and Prevention of Infant Mortality, at the Fifth Annual Meeting, Boston, Nov. 12-14, 1914.

1. Twenty-seven died during the first two hours. Were these classed as still-births, as is not infrequently done, the total mortality under 14 days would be lowered from 3.1 to 2.8 per cent.

2. Kerness: Ztschr. f. Kinderh., 1912, Referate, iv, 19.

gives exactly the same mortality, 2.5 per cent. of 9,610 living births during the first eight days. The figures given by him for the other periods are not recorded, so that they cannot be compared.

Infants have been classed as premature if they were born after the beginning of the twenty-seventh week of gestation and before term. As reliable information on this point was not usually possible to obtain, the length, weight and general development of the child were also used as a guide. Infants have been considered premature who measured less than 46 cm. (18½ in.) in length, and also those whose weight was less than 2,275 gm. (5 pounds). Only two cases have been included among the prematures in which these figures for weight and length were both exceeded; these were regarded as premature for other reasons.

The measurements of the premature infants were as follows:

Length		Weight	
40 to 44 cm.	90 infants	Under 3 pounds	40 infants
44 to 47 cm.	64 infants	3 to 4 pounds	72 infants
47 to 48½ cm.	10 infants	4 to 5 pounds	63 infants
		5 pounds and over	8 infants

Only two of this last group were over 46 cm. in length.

The causes of the premature birth in many of the cases were not recorded, but certain facts were obtainable from the records. The age of the mother, the condition of the baby and the number of the pregnancy were usually noted. The age of the mother seemed to be without influence. In only four instances was the mother under 15½ years of age, and in no case under 14 years. Three others were between 17 and 19 years; 103 between 19 and 30 years; 46 between 30 and 40 years, and only 1 was over 40 years. In 90 cases the mother was a multipara; in 70 cases a primipara; one unknown. The baby's condition was recorded as good in only 13 per cent.; fair in 31 per cent.; but poor in 56 per cent.

The labor was spontaneous in 132 cases and induced in 27 cases; in 20 of the latter the reason was toxemia of pregnancy.

We will now pass to a consideration of the causes of deaths during the first two weeks, taking them up in the order of their frequency. These are shown in the accompanying table.

CAUSES OF DEATH DURING FIRST FOURTEEN DAYS*

	Under One Day		Under 7 Days		Seven to 14 Days		Total Under 14 Days		Grand Totals
Congenital weakness	**93**	2	**120**	7	**14**	2	**134**	9	143
Accidents of labor	**1**	14	**1**	32	..	..	**1**	32	33
Pneumonia	..	..	**3**	9	**3**	13	**6**	22	28
Atelectasis	**3**	7	**3**	14	**1**	7	**4**	21	25
Congenital syphilis	**5**	..	**6**	1	**6**	..	**12**	1	13
Malformations	..	4	**2**	7	..	3	**2**	10	12
Hemorrhage	..	..	..	8	..	2	..	10	10
Sepsis	..	..	..	2	..	7	..	9	9
Asphyxia	..	7	..	8	..	..	..	8	8
Accidental	..	1	..	2	..	..	..	2	2
Undetermined	..	3	..	8	..	..	..	8	8
Totals	**102**	38	**135**	98	**24**	34	**159**	132	291

* Ten thousand confinements: Abortions, 253, stillbirths, 429; living births, 9,318. (Prematures—heavy type.)

CAUSES OF DEATH DURING FIRST FOURTEEN DAYS

Congenital Weakness. — This was assigned as the cause of death in 134 premature infants, and in 9 full-term infants, making a total of 143, or about one-half (49.4 per cent.) of the total deaths under 14 days. This, then, is one of the very largest and most important factors of infant mortality. Its cause must be sought in the physical condition of the mother during her pregnancy, but not in circumstances connected with delivery.

Accidents of Labor. — Accidents of labor were responsible for but 33 deaths, only one of which was in a premature infant. The most important accidents were intracranial hemorrhage and injuries to the head. The single premature infant died from a meningeal hemorrhage aften ten hours; no forceps were used, and the diagnosis was confirmed by necropsy. Intracranial hemorrhage in infants born at term was given as the cause of death in 18, nine coming to necropsy. Of these 18 cases, forceps were used in 7, and 10 were breech presentations.

Besides the cases classed as intracranial hemorrhages, injuries to the head were put down as the cause of death in 10 cases, necropsies being made in 3. Of the 10 cases, forceps were used in 8, and 2 were breech presentations. The most frequently mentioned causes of these accidents were difficult deliveries, persistent malpresentations and prolonged labor, the latter usually before admission to the hospital. Combining the above we have intracranial hemorrhage or injury to head or upper part of spine as the cause of death in 29 cases; of which 15 were forceps, 12 were breech deliveries and the diagnosis confirmed by necropsy in 13 cases.

Other accidents of labor causing death in rare instances were: Rupture of the liver, 2 cases; rupture of hematoma of the liver and peritoneal hemorrhage, 1 case; rupture of umbilical cord before labor, 1 case.

In 10,000 deliveries, therefore, accidents of labor caused death in but 0.33 per cent. of the cases. Of the 291 deaths, 33, or 8.8 per cent., were due to this cause. Very few of the accidents of labor mentioned here belong to the preventable causes of infant mortality. That death was due to such causes in but 0.33 per cent. is explicable only by the skilled management of complicated cases. Outside of a special hospital the death-rate from causes of this sort would surely be higher; but in such an institution, even when we consider that a much larger proportion of complicated cases are treated than occur in general practice, deaths from accidents of labor form an astonishingly small fraction of the infant mortality.

Malformations and Congenital Diseases Other Than Syphilis.—Of the 12 deaths from these causes, 4 were cardiac malformations; 2, intestinal; 2, of the nervous system, and 4 were recorded as status lymphaticus. Only 2 were in premature infants; of the 10 occurring in infants born at term, 8 were confirmed by necropsy. Monsters have been included among the stillbirths. These figures of course do not represent the number of malformations in 10,000 births, but only those which caused death in the first fourteen days. Four other deaths from malformations occurred in the hospital between the fourteenth and the forty-second day.

Atelectasis.—This was a cause of death in 25 infants during the first fourteen days, 4 of these being in premature and 21 in infants born at term. They form a total of 8.6 per cent. of all deaths. Necropsies were obtained in only 5 cases. Atelectasis is also given as a cause of death in 7 infants in the hospital after the fourteenth day. The causes of atelectasis were not determined. All but 3 were normal deliveries, one of

these being a breech, and 2 were cases in which forceps were used.

Asphyxia Neonatorum.—Asphyxia was a cause of death in eight born at term; in none of those born prematurely. It caused 2.7 per cent. of all the deaths in the first fourteen days. Six of the deaths occurred during the first six hours and all of them occurred on the first day of life. Among the causes of asphyxia were mentioned: Laryngeal obstruction; knot in the cord; cord tightly around neck; a loop of cord pulled out alongside the head with the forceps; application of the forceps to the after-coming head and inhalation of liquor amnii. In two cases there was placenta praevia.

Congenital Syphilis.—The records of the Sloane Hospital offer but a limited field of observation on the results of this disease for two reasons. In the first place, cases which are markedly and definitely syphilitic are not, as a rule, received, although in fact a good many are admitted where symptoms are not very marked. In the second place, the Wassermann test was applied in but a small proportion of the cases used in these statistics. The figures for syphilis, therefore, are much smaller than doubtless would have been obtained were the cases taken from an institution of a different character, or from the city records outside of hospitals.

Congenital syphilis was named as a cause of death in 13 infants during the first fourteen days; 12 were premature and one born at term. In addition, there were 6 others, 3 premature and 3 infants born at term that died from this disease during their stay in the hospital later than the fourteenth day. The diagnosis of syphilis, as indicated above, rested in only a small number on the Wassermann test, but on the other symptoms, such as hydrops of the placenta, definite evidence of syphilis in the mother, pathologic evidence in the placenta, a history of other premature births or previous miscarriages, macerated stillbirths, etc.

Hemorrhage of the New-Born.—No deaths in premature infants were recorded from this cause. Ten occurred in infants born at term, forming 3.4 per cent. of the deaths in the first fourteen days. The earliest death occurred on the third day, three each on the fourth and fifth day, one each on the sixth, ninth and eleventh day; there was one also on the sixteenth day. Six received some form of serum treatment. Two had received full doses of human serum without effect; two, single doses of rabbit serum without effect; one, human serum, late and in small doses, without effect; in one other, full doses of rabbit serum, late, without effect.

Sepsis.—No premature infants died from this cause; but of those born at term, 9 died from sepsis, making 3 per cent. of the deaths in the first fourteen days. However, 5 additional deaths occurred in the hospital from sepsis between the fifteenth and twenty-fifth days. Of the infants dying before the fourteenth day, cord infection, phlebitis, and abscess of the liver were present in 3 cases; cellulitis of the scalp and infection of the antrum of Highmore in one each, and 2 were of unknown origin. Deaths from sepsis later than the fourteenth day were 5, from the following causes: meningitis secondary to abscess of the scalp, cellulitis of the neck, suppurative mastitis, multiple abscesses; and one, cause not known. Two were forceps deliveries. The 12 deaths from sepsis were scattered through five years, not more than 2 deaths from this cause occurring in any single year. This is a striking evidence of the efficiency of the asepsis of the institution.

Pneumonia.—Pneumonia was the cause of death in 28 infants, or 9 per cent. of those occurring during the first fourteen days, and of 38 infants who remained in the hospital for a longer time, none, however, more than thirty-two days. Thus the total number of deaths from pneumonia was 66, or 17 per cent. of the total 387 deaths which occurred among infants while in the institution. There were twice as many deaths as those due to accidents of labor. Pneumonia thus ranked next to congenital weakness as a cause of death during this period. So far as season is concerned, no special influence is seen on the occurrence of pneumonia; the largest number (39 per cent.) occurred in the fourth quarter of the year.

Several distinct house epidemics of pneumonia were observed. In March, 1909, four deaths occurred from this cause within two weeks; in October, 1910, there were 5 deaths in four weeks; in September and October, 1912, there were 7 deaths in five weeks; in December, 1912, there were 5 deaths in three weeks. Many of these cases were diagnosticated lobar pneumonia and in a large proportion of those coming to necropsy extensive consolidation of the lung was found. In nearly all of the cases, however, catarrhal symptoms of the upper respiratory tract preceded the pneumonia. Only a small proportion of the pneumonias were seen in the first week of life, nearly two-thirds of the deaths occurring between the fourteenth and seventeenth days.

In obstetric hospitals, as in all institutions where infants are brought together, respiratory infections must therefore be reckoned among the greatest dangers to which these small inmates are exposed. More liberal accommodations for babies must be furnished than those provided in most of our obstetric hospitals and greater care to prevent crowding must be exercised. It is also imperative that those infants who are suffering from even the milder types of infection should be promptly and completely isolated from the healthy, and that nurses also with infectious colds should be temporarily relieved from duty.

STILLBIRTHS

Probably no part of vital statistics is so unreliable as the records of stillbirths. This is due to many causes. The first is that there is no general agreement among the keepers of records as to what should be called a stillbirth. In New York City and State a case is classed as a stillbirth in which a child has never breathed nor shown other signs of life. This is perhaps the best definition that can be given. There is good ground for the belief that for religious reasons death certificates are sometimes written for stillbirths ascribing the death to other conditions. This would tend to raise slightly the figures for infant mortality during the first days of life. But there is not the slightest doubt that a considerable proportion of stillbirths are never registered at all. A convenient and not an uncommon way of reducing the infant mortality rate is to class as stillbirths all the deaths that occur soon after birth. A clerk of the board of health in a middle western city stated to one of us that prior to 1911 death certificates in his city for infants under one week of age were not filed at all. Some registrars of vital statistics have admitted that they were accus-

tomed to class as stillbirths all children dying in two hours; others, all who died in the first two days. In our figures, had we classed as stillbirths all dying in the first two hours, we would have reduced our mortality 10 per cent. Had we excluded the deaths of the first two days, the mortality would have been reduced 50 per cent. From all these considerations it is evident that it is somewhat difficult to determine with even approximate accuracy what is the proportion of stillbirths to living births. The records of New York City may be taken as fairly trustworthy for a large municipality — they are much more reliable than those of most cities — especially since the classification mentioned above is rigidly adhered to. The past records of many cities are entirely unreliable and we cannot compare infant mortality figures until definite knowledge of what is included as stillbirths has been determined.

The percentage of stillbirths in an institution where careful records are kept is therefore of special interest. In the 10,000 confinements at the Sloane Hospital there were 429 stillbirths or 4.29 per cent. It is interesting to see how this compares with the general records of the city. In 1912 the stillbirths were 4.64 per cent. of the 142,280 total reported births; and in 1913 they were 4.65 per cent. of the 141,765 reported births. These figures are sufficiently close to those from the Sloane Hospital to add much to their reliability. While the records of birth registration in New York are not absolutely complete, the Registrar of Vital Statistics estimates that as a result of agitation and penalties enforced during recent years, over 98 per cent. of the births are now recorded.

In comparing hospital with general statistics it should be remembered that difficult and complicated cases form a much larger proportion of those admitted to a special hospital than occur in general practice. This would have the effect of considerably raising the proportion of stillbirths; since in half these the cause of the stillbirth is prolonged, difficult or complicated labor. But it would be expected that more skilful obstetrics and better care would tend to lower the proportion of stillbirths. That the percentage was reduced to 4.29 at Sloane certainly speaks well for the character of the work done there. We have been unable to obtain comparable statistics from other lying-in hospitals in this country. Kerness, however, has given the figures from the *Universitäts Frauenklinik* in Munich. Among 10,297 confinements in four years ending October, 1911, there were 5.22 per cent. stillbirths. What the percentage would be in our different cities were they all reported and honestly registered, one can only conjecture. Taking the Sloane figures as the basis of an opinion they ought not in general practice to be much over 4 per cent.

Period of Gestation.—It was difficult to determine the period of gestation with anything approaching accuracy. This is best estimated by the length of the fetus.

Less than	42.5 cm. (16¾ in.)	56 cases
42.5 to	47.5 cm.	112 cases
Over	47.5 cm. (18¾ in.)	261 cases

More than half these cases were therefore evidently premature infants.

Of the cases, 75 per cent. were admitted during labor and but 25 per cent. were admitted previous to labor. In nearly half the cases (48 per cent.), as the fetal heart could not be heard, the child was presumably dead on admission; while in 250 (57 per cent.), the heart was not heard during labor. Further evidence of the great number of deaths before admission was the fact that in 162 cases (37 per cent.) the fetus was macerated.

The mode of delivery was as follows:

Normal	189	(44 per cent.)
Version with breech extraction	80	(18 per cent.)
Breech	76	(17 per cent.)
Forceps	59	(13 per cent.)
Craniotomy*	20	(4.6 per cent.)
Cesarean section	5	(1.1 per cent.)

*Craniotomy was done on only dead fetuses.

Particular interest attaches to the causes assigned for the death of the fetus.

Prolonged, difficult or complicated labor: (Difficult 75; prolonged, 25; placenta praevia, 29; prolapsed cord, 38; cord around neck, 29; accidental hemorrhage, 18)	196	(45 per cent.)
Toxemia of pregnancy	63	(14 per cent.)
Syphilis	40	(9 per cent.)
Prematurity	18	(4 per cent.)
Monsters	7	(2 per cent.)
Unknown	87	(21 per cent.)

SUMMARY

The deaths in the hospital during the first fourteen days were 3 per cent. of the living births. For half this number prematurity was responsible.

Forty-eight per cent. of the total deaths and 66 per cent. of those due to prematurity occurred on the first day.

Congenital weakness and atelectasis together made up 58 per cent. of the total deaths.

The mortality from conditions intimately connected with delivery — accidents of labor, hemorrhage, sepsis and asphyxia — together made up but 20 per cent. of the deaths of the first fourteen days.

Malformations and congenital diseases other than syphilis caused 4 per cent., and syphilis 4 per cent.

The only important disease developing after birth was pneumonia.

Stillbirths must be reckoned as one of the large problems in infant mortality; they are one and a half times as many as the deaths from all causes during the first two weeks. Except for the larger rôle played by syphilis, the causes of stillbirth in no way differ from those which produce death during the first days of life.

When we come to consider to what degree preventive measures might influence the mortality of the first two weeks of life, two things stand out prominently: The great number of deaths from congenital weakness can be reduced only by care of the mother during her pregnancy; the number of stillbirths and the deaths from causes connected with parturition can be largely reduced by good obstetrics.

Uses Served by Morbidity Reports.—In some diseases morbidity reports make it possible to see that the sick receive proper treatment, as in ophthalmia neonatorum, diphtheria, and, in certain cities, tuberculosis. The reporting of cases of ophthalmia in the new-born makes it possible to save the sight of some infants who would otherwise not receive adequate treatment until after much damage had been done. In diphtheria the health department can be of service in furnishing antitoxin. Some cities furnish hospital or other relief to consumptives who would otherwise be without proper treatment.—John W. Trask, Supplement No. 12, Public Health Reports, April 3, 1914.

SARCOMA OF THE TONGUE

A STUDY OF THE PUBLISHED CASES WITH REPORTS OF TWO NEW CASES

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A diagnosis of sarcoma in any part of the body seems always to fill the mind of the attending surgeon with a certain foreboding of ill in the prognosis. Rightly or wrongly, there persists for a time at least in the minds of those near the patient the haunting fear that there is far more likelihood of recurrence, or of metastasis, than probability of complete and permanent cure after the first surgical intervention.

The cases here reported aroused an interest, and a study of the condition was undertaken to find out the known and published facts concerning sarcoma of the tongue. The reader will not be wearied with airy speculation, and scant space will be given to any theoretical opinion, no matter how eminent its source.

Search through the literature (English, French and German) has brought to my notice fifty-eight reported cases. From a study of these and the two of my own, the following opinions were formulated.

Of course, one is aware that reports of not all the cases are published. The same is true of sarcomas elsewhere as of other conditions. However, one will conclude that at the present day the disease that can boast of only fifty-eight reported cases must be rare. Most of the cases have been recorded since 1885. Butlin at that time wrote of sarcoma of the tongue, "It would be quite useless to try to write an account of it which shall be useful."

The best article I have found on the subject is that of Fripp and Swan[1] herein frequently referred to.

ETIOLOGY

Age.—It is the commonly accepted opinion that all varieties of sarcoma are more common in children. I think this is the usual medical school teaching. Let us see whether it be true with regard to sarcoma of the tongue.

The disease may be prenatal in onset — the congenital type. There are three such cases on record, those of Jacobi,[2] Naegele[3] and Delbanco;[4] that is to say 4.9 per cent. of all reported cases were congenital.

Of the postnatal type the earliest was one appearing in a 7-weeks-old child.[5] The next earliest was in a child of 10 months,[6] and this completes the number of cases of the acquired type found in children under 1 year, 3.2 per cent.

Two more cases, one at 2 and the other at 4 years, make a total of four seen in the first decade, that is, 7.8 per cent. of the acquired type. No cases whatever were reported between the ages of 4 and 14, and all of those occurring in the second decade were seen between the ages of 14 and 19. Three cases at 17, two at 19 and one at 14 make up the total, six cases, between 10 and 20 years, or 11.7 per cent. Adding together those in the first two decades, we find ten cases showing up in patients under 20 years, 19.6 per cent. of all.

I believe that this ought to convince one that the disease is not more common in the early years of life.

After adult life is reached the condition is more frequent. Thus in the twenties there are ten reported cases, 19.6 per cent., or just exactly as many as are found in the first two decades put together. The oldest of these was 28 and the youngest 22 years of age.

In the fourth decade the maximum of frequency is attained — fourteen cases, or 27.4 per cent. of all acquired cases, were found in the thirties.

Between 40 and 50 are only six, 11.7 per cent., and in the sixties only four are recorded, 7.8 per cent., and the oldest of these was 65. The oldest patient of all was 71, and this was the only one found in the eighth decade.

In seven of the cases recorded no mention was made of the age. These were thrown out and the foregoing percentages calculated on a total of fifty-three cases of the acquired type.

Sex.—On looking over the cases one is impressed with the preponderance of males — thirty-three cases. The number of females is twenty. In seven of the cases no mention of the sex was made. The relative known proportion of males to females is 33:20, or 62.2:37.7 per cent. One cannot conclude that it is more common in either sex at any particular period of life, the foregoing relations being fairly well maintained in all the decades.

Nationality.—In only seven cases was mention made of the nationality of the patient. Five of these were Europeans and the other two (my cases) were American born, the one of Irish and the other of Italian descent.

Occupation.—This was stated in ten cases, one was a pupil in a grammar school and one in high school. Two were medical students, one was a teacher, and the remainder were of the laboring class. One should not be surprised to find most of the cases coming from among the laboring class, nor should one hastily conclude that the disease must be more common in laboring persons. There are probably more persons in this than in any other class, and the percentage of cases may not be higher.

Previous Injury.—In only ten of the cases was any mention made of previous injury. In four the tongue had been bitten some time previously, ranging from eight months[7] to eight years (author's Case 2). Another had a broken tooth, which irritated the side of the tongue, and heavy cigaret smoking was supposed to have increased the irritation.[8] In one a cyst had been removed five years before and the tumor grew in the scar.[9] In one the tongue had been scalded two years previously.[10] In one a beard of wheat penetrating twenty-two years,[11] and in one a fish-bone entering two months before[12] may have been etiologic factors. It is possible then that previous injury may play a part in the etiology in at least 16 per cent. of the cases of sarcoma of the tongue.

PATHOLOGY

Site.—The location of the growth is stated with fair accuracy in forty cases. In fifteen cases it was said to

1. Fripp and Swan: Guy's Hosp. Rep., 1902, p. 88.
2. Jacobi: Am. Jour. Obst., 1869, ii, 81.
3. Naegele: Inaug. Dissert., Kiel, 1900 A (Foote).
4. Delbanco: München. med. Wchnschr., 1898, xlv, 155.
5. Gross: Philadelphia Med. Times, 1872, p. 272.
6. Targett: Guy's Hosp. Rep., 1890, p. 24.
7. Dunham: Am. Jour. Med. Sc., 1895, cx, 259.
8. Bleything: New York Med. Jour., 1883, p. 683.
9. Murray: Ann. Surg., 1895, xxii, 271.
10. Littlewood: Lancet, London, 1898, i, 507.
11. Serafini: Rev. de chir., 1909, xl, 242.
12. Downie: Brit. Med. Jour., 1899, ii, 1065.

have been located at the tip or within half an inch therefrom. In only three[13] of these was there at first involvement of the under surface, and one is said to have involved the whole thickness of the anterior third.[14] Of these fifteen cases, six were on the right and only one on the left, while the remaining eight were about the middle of the tip. The total number found involving the base of the tongue was nineteen. Five cases were said to have been on the right and two on the left side of the base. In five cases "the right half" and in three "the left half" was said to have been involved.

Altogether then, sarcoma of the tongue seems to have been more common on the right side and toward the base, although no one part of the tongue can be said to be an especially favorite site of the growth.

The sarcoma begins most often in the tongue substance and grows toward the dorsum, soon causing a projection on the upper surface. In one instance, however, in which it sprang from the root or the base of the tongue above the hyoid bone, it grew downward and forward, causing a bulging beneath the chin.[15] Here, as elsewhere, it is the rule for sarcoma to infiltrate the muscles lying in its neighborhood, growing between the fibers, which are soon destroyed. It soon traverses the median septum and invades the other side of the tongue. It spreads to the faucial pillars and to the floor of the mouth, and when either or both of these become involved the organ becomes fixed, thus rendering the patient unable to protrude the tongue, and increasing the difficulty of swallowing.[16]

The rate of growth varies greatly. One case was said to have been growing twenty-two years.[11] It had, however, begun to grow rapidly a short time before operation. In by far the greater number of cases the patient came for relief in less than ten months after the appearance of the growth, in one within six weeks.[17]

Pedicle.—The tumor has been provided with a pedicle or stalk in six instances.[18] In one of these a growth could be traced through the pedicle into the tongue,[19] and in another[12] there was recurrence, so that in these two at least there can be no doubt as to the correctness of the diagnosis; the others are doubtful.

Size.—The size of the tumor is mentioned quite frequently and varies within wide limits. The smallest was only "the size of a large pea."[20] Another was "as large as an orange," while one weighed 400 gm.[21] and the others varied between these limits. The smallest was of the round-cell type while the largest was a "fascicular sarcoma" (spindle-cell sarcoma?). Many were said to have been "walnut-sized," "the size of a hen's egg," etc., while some were diffuse and the size not stated.

Surface.—The color of the mucous membrane covering the tumor as a rule does not vary much from normal. There may be dilated veins over the surface[22] or the mucous membrane may be very thin or there may be abrasions or excoriations which bleed easily when touched. In both my cases the mucosa over the summit of the tumor was paler than normal, as though stretched over an avascular body, while in Foote's case the color was darker than normal. Hutchinson noted that those growing up from the dorsum behind the circumvallate papillae were likely to present a papillary surface. Generally, the mucous membrane covering the tumor is smooth, and when the tumor presents on the dorsum of the tongue, the mucosa is always firmly fixed to the growth. When, however, the sarcoma first appears on the under surface of the tongue, it is not unusual to find the mucosa freely movable over it, and in two cases it was paler than normal.

Ulceration of the surface is commonly seen, the more so of course in advanced cases or large growths. It does not often occur on the under surface, and when it does it is usually because the growth presses on the teeth. Foote noted ulceration on the side of the tumor where it pressed on the teeth. Altogether, note was made as to presence or absence of ulceration twenty-nine times. In eleven of these ulceration had occurred. The time at which ulceration occurs varies within wide limits. The case of Serafini referred to above had been growing twenty-two years; it was said, however, to have rapidly increased in size a short time before operation, and it was ulcerated. No statement is made as to the time at which ulceration first appeared in any of them. One had existed only two months, and was already ulcerated.[23] Seven of those ulcerated were round-cell, three of them were spindle-cell and one was a mixed-cell sarcoma. In one the tumor completely sloughed out,[24] so that "nothing remained to justify the diagnosis of sarcoma." It appeared later in the glands, however.

Glandular Involvement.—In view of the fact that sarcomas found in regions rich in lymphoid tissue often spread through the lymph-stream, and remembering the presence of lymphoid tissue in the tongue, it is important to know the frequency of glandular metastasis in sarcoma of the tongue. Altogether, the question as to gland involvement was answered thirty-seven times. In the others no mention of glands is made. In eighteen of the thirty-seven the glands were enlarged; just what glands we are not told, but presumably the regional glands.

In four of these cases no glandular enlargement was noticed until after operation, and the question arises in the reader's mind as to whether this enlargement was not simple inflammatory hyperplasia following absorption from the operation wound in the mouth. The subsequent history proves, however, that in two of them there was glandular metastasis; the third remains doubtful, while in the fourth the enlargement subsided spontaneously and was most likely not sarcomatous.

Of those enlarged before operation, fourteen in number, one is of doubtful character, inasmuch as the

13. These are reported by the following:
Targett: Guy's Hosp. Rep., 1890, p. 24.
Mandillon: Mém. et bull. Soc. de méd. de Bordeaux, 1888 (Fripp and Swan).
Poncet: Rev. de chir., 1897 (Fripp and Swan).
14. Mickulicz and Michelson: Atlas der Krankh. des Mundes u. Rach. Berlin, 1892, No. 2, Plates 35 and 37.
15. Schulten: Deutsch. Ztschr. f. Chir., xxxv, 417.
16. Beregszaiszy: Krankheiten der Zunge, Vienna, Butlin, 1887, p. 226. Murray: Ann. Surg., 1895, xxii, 271. Butlin, Knight: Lancet, London, March 26, 1887, p. 623.
17. Lichtwitz: Arch. internat. de laryng., 1898 (Fripp and Swan).
18. The six instances are as follows:
Melchoir, Robert: Rev. de chir., 1899, xvii, 546.
Mickulicz and Michelson: Atlas der Krankh. des Mundes u. Rach. Berlin, 1892, No. 2, Plates 35 and 37.
Mercier: Rev. med. de la Suisse Rom., 1890 (Fripp and Swan).
Marion: Rev. de chir., 1897 (Fripp and Swan).
Lichtwitz: Arch. internat. de laryngol., 1898 (Fripp and Swan).
Downie: Brit. Med. Jour., 1899, ii, 1065.
19. Marion: Rev. de chir., 1897 (Fripp and Swan).
20. Mandillon: Mém. et bull. Soc. de méd. de Bordeaux, 1888 (Fripp and Swan).
21. Poncet: Rev. de chir., 1897 (Fripp and Swan).
22. Shambaugh: Am. Jour. Med. Sc., 1902, cxxiii, 115.
23. Beregszaiszy: Krankheiten der Zunge, Vienna, Butlin, 1887, p. 226.
24. Keenan: Ann. Surg., 1904, xxxix, 956.

glandular enlargement had existed fifteen years, while the tongue condition had been present only three years. This patient was also designated scrofulous.[25]

There are, therefore, thirteen with glandular involvement before operation, and two in which the glands were found to be involved after operation, a total of fifteen cases out of thirty-seven with undoubted glandular metastasis, or 40.5 per cent.

As to the time at which glandular involvement first appeared we have not sufficient data. In one instance the tumor was said to have been present in the tongue less than two months before the glands became involved.[1]

As to the kind of cell in the parent tumor with glandular metastasis, it is hard to make general deductions from the evidence at hand. In thirteen cases mention was made of the type of cell: of these, seven were round-cell, 53.8 per cent.; four were spindle-cell, 38.4 per cent., and two were of the mixed-cell type, 7.7 per cent.

It will be seen farther on that altogether there were twenty cases of round-cell sarcoma reported, and in these the regional lymphatic glands were involved seven times. Dare one say that round-cell sarcoma of the tongue spreads by way of the lymphatics in seven cases out of twenty — in 35 per cent. of the cases? We shall see also that there were in all sixteen cases of spindle-cell sarcoma. Four of these, or 25 per cent., metastasized by the lymph route. And of the mixed-cell type (round and spindle), there were six cases, two of which showed glandular involvement — 33⅓ per cent.

Cut Section.—The color on cut section varies. In both of mine on cut section the middle of the tumor was whitish and more pink-tinged toward the periphery. "Pinkish gray" is an expression often used to describe the color on section, but some have been red. The color varies with the vascularity of the growth. The spindle-cell growths are as a rule firmer and less vascular than the round-cell type. Pigmentation has not been noticed.

The growth may be firm (my Case 2) or fluctuant,[12] or its consistency may vary anywhere between these two extremes. One finds that both round-cell and spindle-cell growths have been fluctuant, and that tumors of both types have been punctured,[26] or incised[12] (mistaken for abscess or cyst?), so that the type of cell present cannot have much influence on the consistency of the tumor. On puncture or incision no fluid other than blood has escaped. Serious bleeding from the growth has occurred; in fact, one patient bled to death[27] from a recurrent round-cell sarcoma.

Correctly to classify the reported cases is, I am sure, quite impossible. The descriptions are in the main incomplete and the nomenclature used often conveys (to me) little idea of the histologic picture. Such expressions as "medullary cancer" and "plexiform sarcoma" may be quite right, but I do not understand them. In two instances the diagnosis is simply "sarcoma."

Abbe[28] reported a case of angiosarcoma, as did also Santesson.[25] Matrissimone's[29] case was a myxosarcoma, while Godlee's[30] case was a sarcoma of the gland of Nuhn and Blandin and called an adenosarcoma. Murray's[9] was an endothelioma. These I leave unclassified, not knowing whether to place them with sarcomas or not. The term "lymphosarcoma" is used frequently enough; believing that by so doing I simplify matters, I have classed all such with the round-cell sarcomas.

There were forty-nine cases in which the type of cell was noted. Of these twenty-two were round-cell. In only six of them, however, was reference made to the size of the cell, and these were of the small-cell variety. In forty-nine cases therefore of sarcoma of the tongue, 44.8 per cent. were round-cell.

The spindle-cell type was not so often encountered, there being only nineteen cases altogether, or 38.7 per cent.

There were eight cases in which both round and spindle cells were found — mixed-cell 16.3 per cent. In one of these in addition cartilage cells were present (my Case 1), and in the case of Godlee[30] referred to above, but not included in this class, was found "a calcifying nodule as large as a pisiform bone."

The growth is said to have been encapsulated or partly encapsulated in five of the cases. One of these was the case of Abbe, an angiosarcoma (?). Eve's[31] case was a mixed-cell sarcoma. A case of Butlin's[32] (Knight, Mr.) recorded as having a capsule was circumscribed but not encapsulated and consisted of small round cells. Downie's[12] case was a spindle-cell sarcoma, and as well as being encapsulated was pedunculated; that of Wiggin was a spindle-cell sarcoma, which had been growing in the posterior part of the tongue for seven years. It recurred in the scar very soon after operation, so there is no doubt as to the diagnosis.

Symptoms.—Usually the first symptom noticed by the patient is the feeling as though a foreign body were in or on the tongue,[24] and depending on whether the growth is in the anterior or posterior part of the tongue, the next is likely to be interference with speech or deglutition.[33] In two instances the patient first sought relief for "sore throat."[34]

Bleeding on mastication was the first sign in the cases of Marion[19] and Mickulicz.[14] These were both pedunculated growths. Bleeding may occur independently of mastication and may be very severe; in fact, in one case this was the cause of death.[27] Bleeding may occur without ulceration.[22]

Pain or soreness has been observed very often, pain more often. This is usually in the tongue at the site of growth and may occur only at intervals as in my cases. It may occur in the presence or absence of ulceration. In the absence of ulceration it may occur at intervals and be of a sharp, stabbing character. Soreness does not often occur without ulceration, but when this happens both soreness and pain may become constant. The pain may radiate to the ear of the same side.[35]

It may occur only on attempting to protrude the tongue or on taking food. It is sometimes so severe as entirely to prevent chewing or the swallowing of

25. Santesson: Virchow-Hirschl. Jahresb., i, 280.
26. Butlin, Knight: Lancet, London, March 26, 1887, p. 623.
27. Hutchinson: Tr. Med.-Chir. Soc., London, 1885, p. 311.
28. Abbe: Ann. Surg., 1894, xx, 72.
29. Matrissimone, abstracted by Pagenstecher: Centralbl. f. Chir., 1904, p. 604.
30. Godlee: Lancet, London, March, 1887, p. 524.
31. Eve: Tr. Path. Soc. London, 1886, p. 223.
32. Butlin: Diseases of the Tongue, 1885, p. 259.
33. Albert: Wien. med. Presse, 1885, p. 171. Shambaugh: Am. Jour. Med. Sc., 1902, cxxiii, 15. Fripp and Swan: Guy's Hosp. Rep., 1902, p. 88.
34. Downie: Brit. Med. Jour., 1899, ii, 1065. Scheier: Berl. klin. Wchschr., 1892, p. 584.
35. Murray: Ann. Surg., 1895, xxii, 271. Scheier: Berl. klin. Wchnschr., 1892, p. 584.

solids.[36] It has been known to disappear as the tumor grew larger.[24] A tickling and burning sensation accompanied the pain in the throat in the case of Schleinzer.[37]

Difficult swallowing is a constant symptom when the tumor is in the base of the tongue, but it has also been noted when the growth was anteriorly situated.[38] The dysphagia is not always due to the pain, but the tumor may mechanically interfere with swallowing. This has been seen in growths beginning in the base or root of the tongue,[39] and in those involving the fauces or pharyngeal wall.[40] It was the first symptom in the case of Fripp and Swan.[1]

An accumulation of mucus in the back of the throat was an early sign in Shambaugh's case.[22] An increased expectoration was noted in the case of Schleinzer.[37] When for any reason swallowing is difficult or painful, drooling of saliva occurs.[35]

Dyspnea is common as a late symptom. It is most often found in those cases in which the tumor is situated far back in the tongue, but in Poncet's case the growth began in the under surface of the tongue; this, however, was a large tumor. A small growth in the tongue just in front of the epiglottis can early interfere with respiration.[22] In the case of Wiggin the patient was obliged to sleep sitting because of pharyngeal obstruction on each attempt at lying down.

Fetor ex ore has been noted twice.[41] In both cases ulceration was present. It will be found more marked in those who do not take trouble to keep the mouth and teeth clean.

Inability to close the mouth properly is seen in the case of large tumors.[21] In the case reported by Perkins the tumor during the past six months was said to have caused a habitual recurrent dislocation of both jaws on attempts at opening the mouth.

Protrusion of the tongue may be interfered with or totally prevented. This occurs when the growth, spreading through the root of the tongue, involves the floor of the mouth or the fauces and pharyngeal wall.[42]

A blister on the tongue where it had been bitten was the first sign in Dunham's case.[7] It persisted for three or four months and then grew hard and tumor-like.

In many of the cases loss of weight and anemia have been remarked. They have been present in cases without as in those with ulceration of the tumor, but I find that all so affected suffered with dysphagia.

Diagnosis.—The condition is a rare one and there is no macroscopic picture on which one may depend. Failure to make a diagnosis, however, will usually be due to failure to remember that there is such a thing as sarcoma of the tongue. It may be confused with inflammatory lesion or with other new growths. Of the inflammations, chronic interstitial glossitis, tuberculosis, lues, actinomycosis or chronic abscess are the most likely to lead to error.

Tuberculosis is generally seen as an ulcer at the side or tip on the dorsum of the tongue, but it may begin as a small lump or tumor, and if so might lead to the diagnosis of sarcoma. It is as a rule found only in those who have well-advanced tuberculosis of the lungs. It ulcerates early. The ulcer shows some tendency in places to heal or granulate, and this a sarcomatous ulcer ordinarily does not do. Still, a case is referred to above in which the whole sarcoma sloughed out, and "left nothing to justify the diagnosis of sarcoma."[24]

The luetic lesions likely to be mistaken for sarcoma are the chancre, the gumma and the diffuse infiltration. The chancre's ulcerated surface, generally raised up on an infiltrated base, reaches its maximum size in a couple of weeks, and ceases to grow. The ulcer precedes the tumor. The glandular enlargement occurs early and is usually very marked. Pain is not common nor is soreness. The appearance of secondary symptoms within six weeks is the rule.

A gumma grows rapidly. It is usually near the middle line and pain is absent. A yellowish or grayish spot soon appears in its center; it breaks and discharges a thick mucoid matter. The resulting ulcer is "punched out" or has undermined edges and its floor is covered with a grayish or yellowish membrane. It soon shows signs of healing.

Diffuse infiltration of lues sometimes attacks the tongue. It usually begins in the deeper parts of the tongue and early impairs the movement of the tongue. There is no tumor to be found and the tongue is only slightly increased in size. Pain is not common or severe and ulceration of the surface does not often occur. If the conditions have existed for long the surface of the tongue is bosselated, and painful fissures may develop in the sulci.

Actinomycosis usually presents signs of inflammation from the beginning; abscess formation with resulting sinus is the rule. Then ensues the diffuse and spreading infiltration with further sinus formation. Later, the granules are seen and the microscope makes the diagnosis easy.

With chronic abscess of the tongue I have had no experience, nor do I find more than a reference to it in the records consulted. Aspiration might be used to clear up the diagnosis.

The condition will hardly be mistaken for benign new growth. It is of far more serious import to the patient to mistake a benign growth for a sarcoma.

Benign growths develop slowly and rarely cause pain. Their outline is usually more clearly defined and they seldom, unless by their size, interfere with the mobility of the tongue. In some of the cases of sarcoma there is a history of the presence of a tumor for many years, but it is to be noticed that shortly previous to consultation the tumor had begun to grow rapidly. A papilloma may appear on the side or tip of the tongue and soon cause the patient to seek relief. Such a growth can be readily removed together with a small portion of the tongue substance, and then a microscopic examination of its point of attachment will reveal its true nature. The sarcomas infiltrate.

Macroglossia is present at birth. The tongue protrudes. Its whole anterior part is enlarged, and it seems edematous though it is often hard. The papillae are hypertrophied. Its rate of growth is slow.

Glandular cysts develop at the tip, along the sides and on the under surface. They may be of slow or rapid growth. They often alternately enlarge and diminish in size. Usually they are grayish and semitranslucent, as their content is most often retained inspissated mucus, which escapes on puncture.

36. Beregszaiszy: Krankheiten der Zunge, Vienna, Butlin, 1887, p. 226. Fisk: Ann. Surg., 1903, xxxvii, 273.
37. Schleinzer: Deutsch. Ztschr. f. Chir., 1911, cix, 283.
38. Perkins: Ann. Surg., 1896, xxiii, 585.
39. Albert: Wien. med. Presse, 1885, p. 171. Schulten: Deutsch. Ztschr. f. Chir., xxxv, 417.
40. Scheier: Berl. klin. Wchnschr., 1892, p. 584.
41. Scheier: Berl. klin. Wchnschr., 1892, p. 584. Schleinzer: Deutsch. Ztschr. f. Chir., 1911, cix, 283.
42. Beregszaiszy: Krankheiten der Zunge, Vienna, Butlin, 1887, p. 226. Murray: Ann. Surg., 1895, xxii, 271.

The diagnosis of thyroglossal tumor has been made in a case of sarcoma.[43] The cyst or tumor growing from the remains of a thyroglossal duct is to be found in the median line and in the base of the tongue. It is painless and grows slowly, and until large interferes only slightly with tongue movement. Such tumors are to be removed when found, and at operation the discovery that the tumor is encapsulated will probably lead the surgeon to make a correct diagnosis before mutilation has been done.

Sarcoma of the tongue is not likely to be mistaken for a carcinoma, but if this should occur, the error is not a serious one, as the treatment is the same in either case. In the case of sarcoma a tumor appears which later ulcerates, while in carcinoma the ulcer, as a rule, is first noticed. A painful chronic indurated ulcer appearing at some point of irritation points to carcinoma; but it is well to remember that at least one sarcoma first appeared as an ulcerated spot in the scar of a scald.[10] In both we are likely to meet glandular enlargement, but this is more common in carcinoma.

After all clinical manifestations have been duly weighed, a diagnosis should not be made until one has excluded syphilis by both Wassermann test and antisyphilitic treatment. This causes a delay of from ten days to three weeks, but the benefits overbalance the dangers.

It used to be said that suspicious growths should be carefully watched. It should be urged that suspicious growths be promptly removed.

All efforts to make a diagnosis may fail until a section of the tumor is examined under the microscope. It is necessary to obtain the section from the edge of the growth that one may, if possible, see both sound and diseased tissue in the section. One must bear in mind that the removal of a section may lead to rapid fungation in the growth, as happened in the case of Barling.[44] Therefore no section should be removed until one is ready to do immediately whatever is indicated by the report of a competent pathologist.

Treatment and Prognosis.—The treatment has been operative in forty-six of the certain cases. In four no operation was done. In two no history is available, the specimens having been found in the museum of the Royal College of Surgeons.

Local removal only has been primarily done in twenty-five cases, two of these with division of the jaw (one of which lived four years without recurrence); three were removed with a V-shaped piece of the tongue (one of these was free from recurrence six years after, one two and one-half years after and one has been lost sight of).

Ten of the local excisions are noted as having recurred. In six others less than two years have elapsed since operation. Only three of the twenty-five patients are *known* to be well more than two years. Of the others there is no postoperative history.

The more radical operative treatment comprises (*a*) removal of one-half the tongue and (*b*) total removal of tongue and some adjacent part or parts.

There were twelve grouped in Class A. Of these, one had lived fourteen years,[12] one five years, and one three and one-half years without recurrence. Three others had lived less than one year without recurrence, to wit, two, nine and eleven months, respectively.

There were eleven cases in which removal of the tongue or more was done. Of these, four are free from recurrence after two and one-half, three, four and five years, respectively. One was well one year after operation. One was lost sight of, and three recurred in a year or less.

In the great majority of cases, the knife was used for the removal of the growth. In two instances it was followed by the actual cautery. One of these recurred in eight days; the other patient remained well two and one-half years afterward.

The electrocautery was used three times in excising the growth; one patient was well two years later, one well two weeks after and the other died soon of recurrence.

Coley's fluid was used before operation by Foote[45] without apparent benefit. It is still being used in my second case. Trypsin and holadin were used in Wiggin's case[43] and with seeming benefit for a while. Pyoktanin was also used in the case of Foote, but it seemed to make the condition worse.

The Roentgen ray was used after operation by Fisk,[46] but with what effect we are not told. It, too, is still being used in my second case. For the difficult respiration, tracheotomy may become necessary (Fripp and Swan).[1] The palliative treatment must be symptomatic.

In formulating my ideas of the prognosis I consider only the fifty cases in which the microscopic examination was made.

It may be conceded that left to itself, sarcoma of the tongue is a uniformly fatal disease. The length of time required by the disease to run its course when uninfluenced by treatment will be very difficult to foretell. In one case[23] death occurred about two months after the first appearance of the tumor. Naegele's patient died of pneumonia in a little more than three months.[3] In the other untreated cases recorded the patient was lost sight of or no mention is made of the final outcome.

Fripp and Swan,[1] in personal communication with the surgeons who had reported cases, were able to follow twenty-five cases in which operation had been performed. Eleven of the patients had lived without recurrence from six months to thirteen years. In thirteen of them there had been recurrence. Three of these "recurred in a short time" and four had remained well more than two years. In one of these four, recurrence appeared three, and in another three and one-half years after operation. In nine cases the recurrence was local only, and in one in the regional glands alone, while in four recurrence appeared both *in situ* and in the glands. These thirteen patients died of the recurrence.

Of patients with the round-cell type, only four out of thirteen remained well longer than three years. Of the spindle-cell variety only two out of twelve were free from recurrence after two years. One of these patients had been operated on four and the other eight years previously. Downie[47] informs me that in his case—spindle cell—the patient is well after fourteen years.

One expects the prognosis to be better after a primary operation than after an operation for recurrence, but one finds that this is not necessarily so. Schlein-

43. Wiggin: Am. Jour. Med. Sc., 1906, xlvii, 24.
44. Barling: Brit. Med. Jour., 1897, i, 297.
45. Foote: Am. Jour. Med. Sc., 1912, i, 198.
46. Fisk: Ann. Surg., 1903, xxxvii, 273.
47. Downie: Personal communication to the author.

zer[37] reported one well five years after an operation for recurrence *in situ* and in the glands, and this in a round-cell sarcoma ("lymphosarcoma"!).

As to metastasis through the blood-stream, there are three cases in which this seems to have occurred.[48] In one of these,[23] the whole course of the disease was only two months and in another eleven. Murray's[9] patient died in three years of metastasis in the brain. In the case of Beregszaiszy,[23] the peritoneum, mesentery and bowel wall were the seat of metastatic growths; in Keenan's[24] the stomach and peritoneum; while the skin was the site of metastasic deposit in a case of Butlin's.[32]

The direct cause of death may be exhaustion, pneumonia, sepsis or hemorrhage. I find no death occurring during the operation or immediately afterward. It is likely that a death attributed to sepsis, or pneumonia, or hemorrhage, occurring within eight days may be laid to the operation; one does not say so positively.

Recurrence has been noted up to three and a half years after operation.[49] I find no recurrence to have been delayed longer than this. Recurrence has been seen as early as eight days after operation,[40] and several recurred in two weeks.

The probability of recurrence after local excision is impossible to estimate from the case reports. Of eleven undergoing the intermediate operation (half the tongue with or without glands) four had been previously operated on by local excision, and in the nine requiring the most radical treatment only two were secondary operations.

There are certain cases reported in which the tumor was said to have been present for from six to twenty-two years.[50] In several of these the statement is made that the tumor had shortly before operation taken on rapid growth.

A fibroma that takes years for its development may show nearly the same microscopic picture as a spindle-cell sarcoma.[51]

CASE REPORTS

CASE 1.—A. H., schoolboy, aged 14, Irish-American, comes because of lump growing in tip of tongue. Lump has been growing five or six months. History of having bitten tongue about two years ago. Has occasional darting pains in tongue and cannot speak as he used to. Has not lost weight, is well nourished and strong.

There is an irregularly oval lump in the tongue at its tip, slightly more on the right side than on the left. The lump is about ¾ inch long and about ½ inch wide at its middle; it projects both on the dorsal and under surfaces. It is whitish below and pinkish above. The papillae can be seen on the posterior but not on the anterior part of its upper surface. There is no ulceration. The mucous membrane above is fixed to the growth; that below is fixed to it anteriorly only. It is firm to the feel, resilient and irregular. One projecting boss in the lower anterior part is hard. No fluctuation. No glands feelable.

The diagnosis hung between new growth and implantation cyst and it was decided to remove it.

Under local anesthesia (novocain 0.5 per cent. infiltration in tongue on each side well back from tumor) a V-shaped portion of the tongue bearing the tumor was excised. The base of the part removed measured 1½ inches and from middle of base to apex measured 1⅜ inches. Through-and-through interrupted silkworm-gut stitches about 1 cm. apart had been placed before the incisions were made and these when tightened controlled the bleeding and closed the wound.

There was very little shock.

Liquid diet was allowed and talking forbidden.

Union was by first intention and the last stitch was removed on the ninth day.

Cut in two, the tumor was solid throughout with a sharply limited edge. In its anterior part was a nodule about 1 cm. in diameter which was semitranslucent, somewhat opalescent, and harder than the adjacent tissue. The scraped surface yielded a whitish mucoid substance.

The specimen was sent for microscopic examination and the report came back that the growth appeared to be sarcomatous and contained round and spindle cells and that a part of it contained cartilage cells.

The patient returned no more after the stitches were removed and inquiry showed that a false address had been given. Nothing further has been heard of him by me.

CASE 2.—L. D., 19, male, Italian-American, student. Lump in tongue, began to grow two and one-half or three months ago; has a drawing feeling and occasional sticking pain not very severe. Bit the tongue eight years ago at site of growth. Growth has always been hard. Had not interfered with movement of the tongue, nor with speech up to three weeks ago. It was then removed but is now growing again. The patient now has a slight lisp. Sections were made from growth removed and a diagnosis of sarcoma was made. A glance at the slides (brought along) showed an infiltrating growth made up of spindle and round cells, the former predominating.

The growth in tongue is situated ¾ inch back from the tip and is just to the left of the median line. It is pinkish and the surface is raised rounded above the level of the dorsum about ¼ inch and on its summit is a small puckered scar; the growth is about the size of an ordinary marble. It is fixed in the substance of the tongue, is regular of surface, spherical in form and has a resilient feel. There is slight tenderness. This the patient attributes to the recent operation. There is nothing in the history to arouse suspicion of syphilis, and the Wassermann is negative.

The growth was removed in August, 1913. The cheek was split as far as the masseter on the affected side. The root of the tongue was transfixed and a silver wire carried through and tied (twisting) as far behind the foramen cecum as possible. (I do not think this wire did any good whatever; it was recommended as a preventive of bleeding.) The rest of the technic followed Whitehead's procedure for the removal of half the tongue except that one had to go well to the right of the median line and the lateral incision was directed obliquely backward as I believed by so doing I should secure a better approximation, and I did. There was bleeding from the right lingual (ranine), but the left was caught before being cut. Not more than an ounce or two of blood was lost altogether. Not so much would have been lost but that it was deemed advisable to remove a little more from the right side opposite where the growth had been, necessitating a third cut. When the silkworm-gut stiches were drawn tight all the bleeding was well controlled. Healing was by first intention.

Microscopic examinations showed an infiltrating growth composed of round (small) and spindle cells.

The use of Coley's fluid was begun in the first week and is still continued. Massive dosage of the Roentgen ray was advised and the patient still receives one treatment per month. He writes me that he speaks with a lisp only when he gets excited. He has recently gained 11 pounds in weight and says he feels perfectly well.

48. Beregszaiszy: Krankheiten der Zunge, Vienna, Butlin, 1887, p. 226. Keenan: Ann. Surg., 1904, xxxix, 956. Murray: Ann. Surg., 1895, xxii, 271.

49. Fripp and Swan.

50. Heath: Tr. Path. Soc. London, 1869, xx, 157. Hutchinson: Tr. Med.-Chir. Soc. London, 1885, p. 311. Abbe: Ann. Surg., 1894, xx, 72. Perkins: Ann. Surg., 1896, xxiii, 595.

51. In addition to the references already given, the following will be found of interest:
Cheatle: Med. Press and Circular, 1906, ii, 14.
Fiedler: Ztschr. f. Med., Chir. u. Geburtsh., 1864, new series, iii, 305.
Huter: Berl. klin. Wchnschr., 1869, xxxii, 346.
Michael: Handb. d. Laryngol. u. Rhinol., 1899, ii, 634.
McBurney: Med. Rec., New York, 1893, xliii, 439.
Stern: Deutsch. med. Wchnschr., 1892, p. 495.

THE EXPERIMENTAL EFFECT OF THE COLON BACILLUS ON THE KIDNEY *

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The following experiments were undertaken without any preformulated theories and with no attempt to prove anything. My previous work on the colon bacillus stimulated a desire to know more about this organism in its pathogenic rôle within the kidney.

This work is represented by one hundred animal experiments wherein a comparative action between the colon bacillus, the typhoid bacillus and the staphylococcus is shown under different conditions, and these bacterial invasions compared with the effect of a soluble toxin made from each.

In the first series 1 c.c. of a twenty-four-hour bouillon culture of various strains of colon bacilli was injected into one ureter just below the pelvis. These infected kidneys were removed at varying intervals along with the opposite kidneys. Most of the injections were made without producing any obstruction in the ureter, and some with obstruction by either narrowing with a ligature or a small pebble placed within the lumen.

As has been so often shown, the obstructed ureters produced the typical pathology of a pyonephrosis, varying in extent in direct proportion to the extent of the obstruction. The picture produced by the simple injection was consistent in each case, showing a glomerular nephritis. The cellular infiltration was of the polynuclear type in the infected organ, and mononuclear in the opposite one. In some areas there were interstitial hemorrhages, but no extensive involvement of the tubules was found in any instance. No focal necrosis or miliary abscesses, and in no instance in which the kidney remained for longer than twenty-four hours could bacteria be demonstrated in the tissue or by culture from the urine. No specimen showed a limitation of the pathologic condition to the pelvis even as soon as twenty-four hours after the injection, but each picture was that of a pyelonephritis, with the glomeruli the seat of the inflammation. The opposite kidney in every instance showed a similar change, but much less pronounced. In those cases in which the opposite kidney remained *in situ* for some time after the removal of the infected one, a complete restoration to normal is shown. This fact is borne out clinically very frequently. A surgical kidney on one side will produce a toxic nephritis in the opposite organ, which recovers spontaneously on removal of the seat of the infection. That it is a toxic condition is shown in some of the subsequent experiments.

The typhoid bacillus produced a more generalized parenchymatous nephritis, which was emphasized by obstructing the lumen of the ureter, but did not produce a pyonephrotic change. The opposite kidney showed similar changes. Blood-cultures and urine-cultures were positive in each instance.

The staphylococcus produced either focal necrosis or a complete pyonephrosis. Cultures from the urine were positive; from the blood negative.

The next step was the injection of cultures of these three organisms, singly, into the sheath of the ureter, extraperitoneally, at about its middle third; and in another group of animals subcapsularly at the cortex. The histologic pictures were practically the same as when the organisms were introduced through the ureter. The typhoid bacillus produced a general parenchymatous nephritis; the staphylococcus focal necrosis, with inflammatory processes throughout the kidney. The colon bacillus still showed the glomerulitis predominating, and, in addition, when the injection was made at the cortex, a pyelitis secondary to a nephritis. Blood-culture was positive for typhoid, urine-cultures positive for staphylococcus and typhoid.

In the next series of experiments soluble toxins in varying strengths were made from the three organisms and injected at the locations just described. The histologic picture changed somewhat. The typhoid toxin showed an intense parenchymatous involvement, with areas of granular degeneration. The opposite kidney was involved to about as great an extent. The staphylococcus toxin gave a similar picture, but not nearly so marked. The colon toxin gave a very pronounced picture of a generalized parenchymatous nephritis. The type of cellular infiltration with each toxin changed from the polymorphonuclear to the lymphocytic, a rather significant change. The opposite kidneys were involved equally as much, and all became normal from three to four weeks following the injection of the toxin. When too great a concentration of the toxin was used, the animals died very promptly. No attempt was made to ascertain very accurately the minimum lethal dose.

If any conclusions are to be drawn from this work, three facts stand out prominently:

1. A non-traumatized kidney in the absence of ureteral obstruction will overcome spontaneously the invasion of virulent micro-organisms.

2. It appears that our recently slighted blood-stream is the means of extension of these infections from the pelvis to the cortex, from the cortex to the pelvis, and in all probability from the periureteral tissue to the renal parenchyma. This is based on the fact that the glomeruli are the structures mostly involved. Though, in the face of the recent very interesting work of Hess,[1] later verified by Eisendrath, whose specimen showed a predilection for the lymph-tract as the route for ascending infections, my renal specimens show only the glomeruli involved.

3. The pathologic changes are due to a direct toxic action and the soluble toxins of the organisms are carried to the opposite kidney, where a similar picture is seen.

In no instance does any specimen show the changes found by Hess, who asserts that cultures of colon injected into the pelvis will produce pus foci and areas of necrosis within from thirty-six to forty-eight hours, and if the bacteria act longer the changes become more marked. The very convincing work of Francke[2] leads one to believe that the colon bacilli pass from the mesenteric lymphatics into the right kidney, seldom into the left, yet left-sided pyelitis is almost as fre-

* Read before the Section on Genito-Urinary Diseases at the Sixty-Fifth Annual Session of the American Medical Association, Atlantic City, N. J., June, 1914.

* From the Department of Experimental Surgery of the Morris Institute of Medical Research, Michael Reese Hospital.

1. Hess: Deutsch. med. Wchnschr., 1912, No. 30; Mitt. a. d. Grenzgeb. Med. u. Chir., 1912, No. 26, p. 135.

2. Francke: Arch. f. Anat. u. Physiol., 1910, p. 191; Mitt. a. d. Grenzgeb. d. Med. u. Chir., 1911, xxii, 623; Berl. klin. Wchnschr., 1911, p. 1973.

quent as right, and if we are to ascribe to gastro-intestinal disturbances the rôle for the production of colon bacillus pyelitis, then the blood-stream must be at least as important as the lymph-stream in carrying the bacteria to the kidney.

Most of the experimental work done along this line has been with narrowed or completely obstructed ureters, which, of course, gives an exaggerated pathologic picture. My object was not to imitate a clinical state, but to ascertain how far the kidney could overcome a simple bacterial invasion, since we see so often a bacteriuria without any clinical manifestation.

Mueller[3] concludes that a pelvic infection spreads to the cortex along the lymphatic channels upward, but all of his experiments were performed after first obstructing the ureter. Kumita[4] has traced the lymphatic capillaries in the cortex, where he says they communicate with the lymphatics of the capsule and surround in a most intimate manner all the convoluted tubules. The meshes of this network are circular and surround in a parallel manner the blood capillaries. From the capillaries, lymphatic vessels arise which surround Bowman's capsule and penetrate the glomeruli. This finding confirms the work of Mueller, although it does not prove that infections in non-obstructed ureters extend along the lymph-channels. All of my specimens show the glomeruli the seat of the cellular infiltration, rarely any interstitial or tubular involvement. This, of course, speaks for a blood-stream extension. One would expect to find thrombi or emboli in hematogenous infections, yet none could be demonstrated. If the extension were urogenous, that is, along the secretory current, the entire epithelial lining of the corresponding tubules, from the papillae to the point to which the inflammatory process has ascended, would show a corresponding damage, which certainly has not been seen in any of the specimens.

In justification of my conclusions, so widely differing from such reliable observers, whose work has been quoted, it must be remembered that this piece of work was not begun to prove any clinical picture or trace the origin of any pathologic process. The technic employed, therefore, differs markedly from that of other experimenters along this line, and the results necessarily are different.

My sincere appreciations are due Dr. James W. Jobling and Dr. Edwin Kirk for their many valuable suggestions.[5]

TECHNIC

Preparation of Bacterial Cultures.—Pure cultures of colon bacilli isolated from the human and rabbit feces. Also stock cultures used. Quantity injected, 1 c.c. of twenty-four, forty-eight and seventy-two-hour bouillon cultures. *Staphylococcus pyogenes albus* and typhoid bacillus obtained from stock culture. Same quantity used.

Preparation of Toxins.—The toxins were made by washing off in normal salt solution a twenty-four-hour agar-slant. This was allowed to stand twenty-four hours. Toluene added to kill the bacteria, which required from twenty-four to forty-eight hours; this toluene then pipetted off. They were then centrifuged and the supernatant solution (the soluble toxin) pipetted off and stored in the ice-box until used.

Preparation of Tissues.—Cut tissues immediately fixed in Zenker's solution and in 10 per cent. liquor formaldehydi. All embedded in paraffin.

Stains Used.—Hematoxylin eosin; Unna's eosin methylene blue; Loeffler's methylene blue and Gram stain for bacteria in the tissue; carmin for fibrin.

Urine cultures made from bladder. Blood-cultures made from renal vein or heart, if at necropsy. Cultures from urine and blood made in bouillon.

Operative Technic.—Twenty-five rabbits and seventy-five dogs used. Anesthetic, ether. Typical lumbar incision. Great care was taken not to traumatize either the kidney or surrounding structures. Whenever possible, the injections were made without tearing the organ from its fascial and fatty bed. Injections into the periureteral tissue were all made extraperitoneally. The kidneys were removed from one to thirty days following injections.

3. Mueller: Arch. f. klin. Chir., 1912, xcvii, 44.
4. Kumita: Arch. f. Anat. u. phys. Anat. 1909.
5. In addition to the references already cited, the following will be found of interest:
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Bauereisen: Ztschr. f. Gynäk u. Urol., ii, No. 5.
Schnitzler and Savor: Fortschr. d. Median, 1894, No. 23.
Von Klecki: Arch. f. exper. Pathol., xxxix.
Münnich: Arch. f. klin. Chir., 1912, No. 98.
Wildbolz: Cor.-Bl. f. schweiz. Aertze, Jan. 1, 1912.
Venus: Centralbl. f. d. Grenzgeb. d. Med. u. Chir., Sept. 16, 1911.
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Brewer, G. F.: The Present State of Our Knowledge of Acute Renal Infections, THE JOURNAL, A. M. A., July 15, 1911, p. 179.
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ABSTRACT OF DISCUSSION

DR. LOUIS E. SCHMIDT, Chicago: Work of this kind brings out a great many clinical observations. When we know work of this kind to be true, naturally our clinical point of view may differ from what it was from the former facts at our command. When a disease condition, obstruction and infection, exist on one side it is well worth our while to study the opposite kidney; there can be no question that the toxemic action on the opposite kidney is just as important as in the kidney in which the disease really exists. In the experimental work which Dr. Koll has done, of which the details are not given, how long after the beginning of obstruction and infection were the kidneys removed? From the clinical point of view when we have a renal stone possibly obstructing the lower end of the ureter, how long are we permitted to wait before we consider operative interference on that side and before the so-called sound side becomes involved? That is a matter of great importance. There is no question that all of us see patients with ureteral stone that we do not operate on because the stone is at apparent rest and there is practically no infection present, but we must take into consideration the condition that exists on the other side. Naturally, from the circumstance that there are more infections on the right side, we could wait longer on the left side than on the right. Furthermore, the question of bacteriuria exists. That question is still under discussion. It is often stated that bacteriuria arising from the kidney cannot exist unless there are changes in the renal epithelium; that in individuals suffering from tuberculosis there are tubercle bacilli found in the urine without any renal changes. That is doubted more and more at present. It is believed that the intoxication has caused changes in the kidney which permit this condition to exist. I am under the impression that the colon bacillus, which is the one we most frequently deal with in bacteriuria, produces some changes which permit this condition to exist. I have yet to see cases of renal bacteriuria which clear up without any treatment. I have seen prostatic cases clear up from time to time. They would be macroscopically clear one week and the next week they would show the typical characteristics of bacteriuria. Another important point, clinically, is that we should always take notes of cases, for instance, of chronic appendicitis that exist for long periods of time, in which the condition is not acute but the patient has pains in the right lower quadrant. This condition undoubtedly produces some obstructive condition, and naturally infection can easily occur, and in that way may produce renal conditions similar to those described in the paper.

DR. H. W. PLAGGEMEYER, Detroit: One case has bothered me a great deal of late, and I want to ask Dr. Koll what he thinks about it. This patient gives no history of pain, but the phthalein on the right side was merely a trace at the end of thirty minutes. On the left side there was 16 per

cent. in the first fifteen minutes and 7 per cent. in the second fifteen minutes, making a total of 22 per cent. The blood urea was 0.2 per cent., the urinary urea on the right side was 0.7 per cent., and on the left side 0.8 per cent. by the Marshall test. On the right side there was a profuse colon infection in the urine and also on the left side. What would Dr. Koll think about operating in a case like that with a distinctly low phthalein on the opposite side?

DR. A. J. CROWELL, Charlotte, N. C.: Some five or six years ago I prepared a paper on the rationale of traumatic nephritis. I had no proof except clinical proof that such was the case but this was really positive of a right-side nephritis following severe traumatism to the left kidney. In Dr. Koll's experimental work I think I see further proof that such a condition can occur. He speaks of the removal of an injured or diseased kidney preventing a diseased condition of the opposite kidney. Dr. Squires and I have lately been doing some experimental work on traumatizing the kidney and injecting the various fresh bacteria, but we are not yet ready to make any report further than the macroscopic appearance. We have operated on about fifty rabbits up to the present, traumatizing the kidney with and without injecting various bacteria into the veins thereafter. I hope, later, to make a report of this work. Macroscopically, the traumatized kidney followed with intravenous bacterial injections, with the exception of a few cases, showed but little of interest.

DR. I. S. KOLL, Chicago: One big mistake that experimenters frequently make is to lay down the laboratory findings as a dogmatic control of clinical findings. There is a long range between the test-tube and the patient, and I am convinced that while our experimental work may pave the way for our clinical deductions, nevertheless we must be careful in applying laboratory findings to clinical manifestations. Now, as to the length of time that it is safe to allow a stone or an infection to remain before urging operative interference, the point is an arbitrary one, because if a calculus is obstructing either the pelvis or the ureter, in the absence of infection, of course, the kidney is not going to be destroyed as rapidly as if there was an infection. How long before the kidney will be infected when there is obstruction to the ureter also cannot be foretold. The infection in the kidneys removed in my experimental work varied from twenty-four hours to four weeks. I found that within twenty-four hours after the injection of colon bacilli into an obstructed ureter there were very marked changes in that kidney. In some instances in which there was a high degree of virulence of the organism there was a marked tendency to total destruction of the kidney in twenty-four hours. In the absence of obstruction—and by obstruction we must consider that due to edema or inflammation of the ureter, because that certainly is an obstruction—I was not able in twenty-four hours to recover the organism in the urine taken from the bladder. This widely differs from the work of other experimenters, but I tried it over and over. I was careful not to bring the kidney up out of its bed. I went into the ureter and injected my organism extraperitoneally, and thereby produced less traumatism. In those cases I could not recover the organism after twenty-four hours. I do not believe there is a bacteriuria without renal changes. Within twenty-four hours there is a distinct nephritis. I do not believe that a pyelitis exists as a pathologic entity. In twenty-four hours the glomeruli show changes, but of course the changes are more marked in the pelvis. Answering Dr. Plaggemeyer's question concerning the involvement of both kidneys, if he found involvement indicated by the low phthalein output, the question is, What is the type? By a toxic condition in the opposite kidney I mean that there is no infection, but the toxins are producing an irritation of the parenchyma that is manifested, not by pus-cells in the urine, but by casts, albumin and red corpuscles in more or less abundance. So I should say that if in one kidney he found practically no pus cells present and that great quantities of pus were in the opposite side, that is certainly a case for operation. The toxic condition is manifested not by leukocytes but by hyaline and granular casts, by albumin and by erythrocytes.

EXPOSURE OF APPENDIX BY CULLEN'S METHOD

A SIMPLE WAY OF REMOVING AN ADHERENT RETROCECAL APPENDIX THROUGH THE ORDINARY GRIDIRON INCISION

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For at least seven or eight years Dr. Thomas Cullen, one of the attending surgeons at the Church Home and Infirmary, has been employing such a simple and easy device for exposing retrocecal and densely adherent appendices that I feel its general adoption would not only shorten the time taken in these operations, but also render the surgeon's work much easier.

Fig. 1.—Pushing a blunt Kelly forceps through the meso-appendix at the cecum.

One of the most important points for the operator to decide when commencing an appendix operation is what kind of an incision to make. In those cases in which the abdominal pains are rather vague, it is usually wiser to make a right rectus incision, as either the gall-bladder or appendix or both may be diseased. With the right rectus incision it is possible to lengthen the wound upward or downward as may be desired. In this manner the entire field can be most satisfactorily exposed.

Again, when a gangrenous appendix is suspected, a right rectus incision may be made and if drainage be necessary then a small gridiron incision can be made near the anterior superior spine just where the drain is to be inserted directly down to the cecum.

It is not my desire to discuss the general subject of appendix incisions but to refer to the method Cullen and those associated with him have found eminently satisfactory in those cases in which the diagnosis of appendicitis was relatively certain and the pain localized to the appendix region—those cases in which one would naturally make a gridiron incision. Not infrequently in these cases after the incision has been made it is next to impossible to expose the appendix, as it is

retrocecal and often adherent. In such cases partial exposure may finally be obtained after placing and replacing the retractors several times, but in other cases it will be necessary to cut across some of the abdominal muscles to obtain adequate exposure.

In nearly every case the base of the appendix can be located by following the longitudinal band on the cecum. When once this is located a Kelly blunt forceps is pushed through the meso-appendix at this point and grasps a piece of tape as indicated in Figure 1. The two ends of the tape are then grasped in the tip of the forceps and used as a tractor. Strong traction is exerted without any injury either to the cecum or to the appendix. The traction invariably brings up from three-fourths to an inch of the appendix. Another Kelly forceps is passed through the meso-appendix and grasps a second piece of tape, as shown in Figure 2. The second tape is now used as a tractor and a further portion of the appendix exposed. A third forceps is pushed through the meso-appendix and a loop of tape passed around the appendix, as indicated in Figure 3. Traction on this third loop will usually expose the tip of the appendix. The meso-appendix is now clamped off from tip to base, as indicated by the arrows in Figure 4. Sometimes only two tapes are necessary. As the meso-appendix is cut, the tapes are loosened and removed. They lie outside of the abdomen and with care there is no danger of their being lost. We have never experienced any trouble from this source.

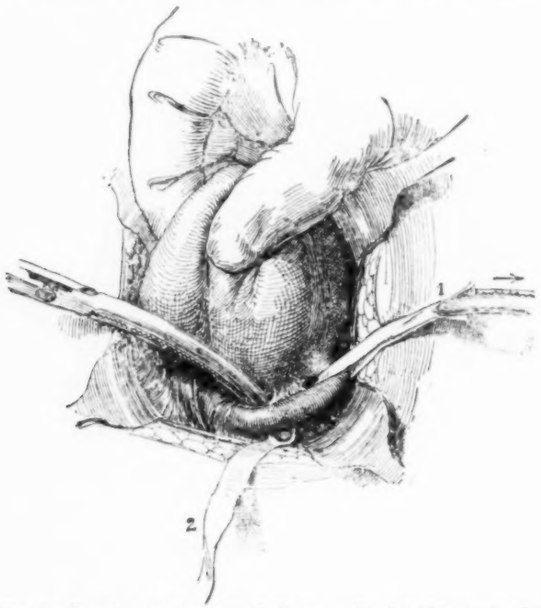

Fig. 2.—Traction on the base of the appendix, bringing more of the appendix into view.

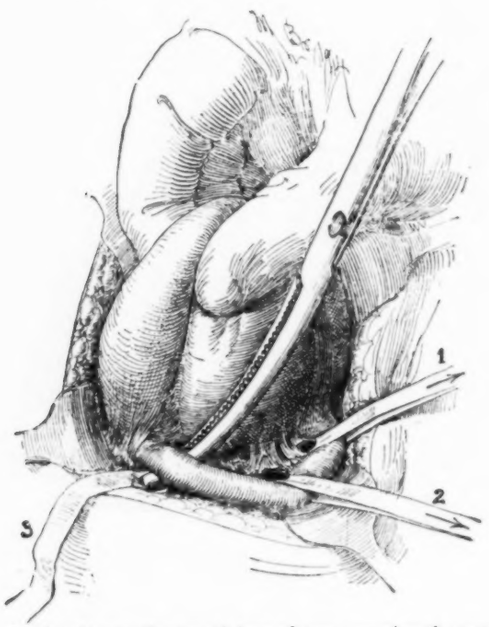

Fig. 3.—Traction on the second loop of tape, exposing the appendix near its tip.

By using this method almost any subacute or chronic retrocecal and adherent appendix can be delivered with ease, and an otherwise difficult and tedious operation rendered a simple one. Various members of the resident staff of the hospital have employed this method of exposure of the appendix with much satisfaction and in no instance have we seen the cecum or appendix injured by the traction with the tape.

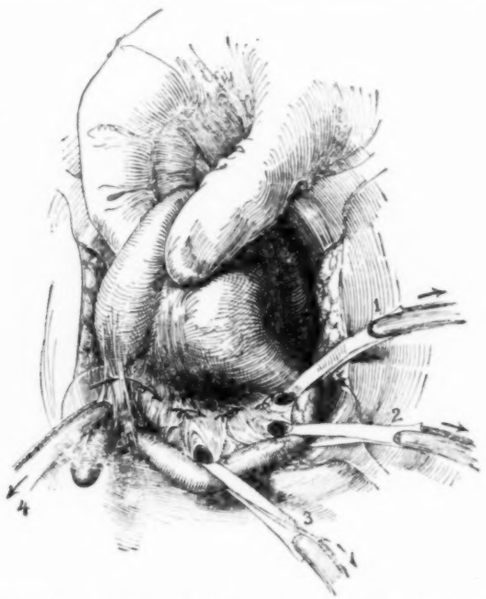

Fig. 4.—The meso-appendix is clamped on its cecal side and cut as indicated by the arrows. Note that the tapes produce an equable and broad traction and that they do not injure the appendix. By this method a long, adherent retrocecal appendix can be removed readily through an ordinary gridiron incision.

The subsequent steps in the removal of the appendix have naturally varied, depending on the method best suited to the individual case.

I wish to express my sincere thanks to Mr. Max Brödel, director of the Department of Art in Medicine of the Johns Hopkins Medical School, for the graphic illustrations portraying the various steps in the procedure herein described.

Sleep as a Habit.—From the psychological point of view, remember that sleep is, above all, a habit. Sleep is one of the rhythms of our existence, and in the lower animals these are more accurately observed than with us; it is only civilized and thinking man who interferes with this the most sacred of the rhythms of Nature.—H. Crichton Miller, *Medical Press and Circular.*

THE USE OF PITUITARY EXTRACT AS A COAGULANT IN THE SURGERY OF THE NOSE AND THROAT

HARRY KAHN, M.D.
AND
L. E. GORDON, M.D.
CHICAGO

The rhinologist has long sought a harmless, efficient drug that will control the hemorrhage during and following operations on the nose and throat. Calcium salts have been used with indifferent success. Blood-serums have given reliable results, but have the disadvantage that anaphylaxis may be produced. Epinephrin only produces its results on the mucous membranes, and then only when directly applied.

Citelli[1] reported to the Seventeenth International Medical Congress in London, August, 1913, on the use of pituitary extract for the control of hemorrhage following turbinectomy, sinus operations and tonsillectomy. Following his suggestion, we have used the drug with universally good results. The blood loss during and after turbinectomies was slight; in fact, the operation itself was almost bloodless. The hemorrhage following curettements of the ethmoids was also much reduced. The blood loss following the tonsil operation was greatly lessened. The snare, Sluder and Beck methods were used for the tonsil enucleation. Not a single untoward result have we had in over one hundred patients operated on which could be attributed to the drug.

The action of this drug as a blood-stilling agent did not seem to us to be wholly explained by the action on the walls of the blood-vessels, as is assumed by most writers, hence we were constrained to look further, and found that the coagulation time was reduced to from one-third to one-half or more after the hypodermatic administration of pituitary extract.

We also made a study of the blood-pressure before and after the administration of the drug. This was done in the hope that we might add something to the knowledge of the blood-pressure of children in normal health, and also to study the effect of the drug on the blood-pressure. The systolic and the diastolic pressures were taken before and after the administration by the auscultation method, a mercury sphygmomanometer of Stanton, with the modified cuff for children, as suggested by Gerstley. A brief summary of our results follows:

Our cases, with the exception of three, were children aged from 4 to 12 years, to whom 12 minims of the drug were given hypodermatically. The influence on the coagulability of the blood was profound. It was reduced from one-third to one-half. In some cases a greater reduction was noted. For instance, in one case the coagulation time was four minutes before the drug was given, and after its administration, only one minute was required for the clot to form. Another was reduced from three and one-half minutes to forty-five seconds, and still another from two minutes and twenty seconds to thirty seconds, etc.

The results of our observations of the blood-pressures are noted below under conclusions.

TECHNIC OF ADMINISTRATION

Pituitary extract (Parke, Davis and Company) was administered hypodermatically in the dose of 12 minims to children and 15 minims to adults, not less than fifteen minutes before the intended anesthetic. The coagulation time was taken before and again after the fifteen-minute interval. The blood-pressures were taken at the same intervals. The coagulation time was determined in the early cases with the Brodie and Russell[2] coagulometer, and the remainder of the cases by the drop-on-the-slide method.

CONCLUSIONS

1. The coagulation time of the blood is materially reduced by the hypodermic administration of pituitary extract.

2. The hemorrhage following nasal and throat operations is much reduced, especially operations on the turbinals.

3. The effect on the blood-pressure of children is variable, as follows: Systolic pressure was increased in 55.31 per cent. of the cases, reduced in 36 per cent. and unchanged in 8.5 per cent. Diastolic pressure was increased in 35.5 per cent. of the cases; reduced in 35.5 per cent., and there was no change in 29 per cent. Pulse-pressure was increased in 61 per cent. and decreased in 39 per cent. of the cases.

30 North Michigan Avenue—32 North State Street.

1. Citelli: Ztschr. f. Laryngol. u. Rhinol., 1913, vi, 523.

OPERATIONS FOR CLEFTS OF THE HARD AND SOFT PALATE*

LINN EMERSON, M.D.
ORANGE, N. J.

A large percentage of these patients are not seen in early infancy by the operator, as the parents do not appreciate the importance of early operation. The parents of a child with cleft palate should be told by the family physician that, if not operated on before the fifth year, the child will never have clear speech no matter how good the cosmetic result, as the child will not be able to enunciate clearly if the operation is performed at a later date.

The Brophy operation should be performed before the end of the third month and Brophy himself operates as early as the second or third week. The technic, as described by Carmody in a recent paper is the following:

The patient having been anesthetized, preferably on the operating table, is placed in a semi-Trendelenburg position thus avoiding aspiration of blood. The lip is raised and with the special, heavy, curved needle a heavy silk suture is carried through the lower part of the maxillary bone behind the malar process, so that the end will show above the palate process, when it appears at the inner border. Care should be exercised to avoid injury to the teeth by working the needle between them if possible. The silk is caught with the tenaculum hook and the needle withdrawn. A needle with the curve in the opposite direction is used in the same manner from the opposite side, leaving silk with closed loops facing each other. The needle is then carried through in the same manner in front of the malar process from both sides, and on the longer side an extra loop farther forward. By looping one loop through the other, as first used by

2. Brodie and Russell: Jour. Physiol., 1897, xxi, 403.

* Read before the Section on Laryngology, Otology and Rhinology at the Sixty-Fifth Annual Session of the American Medical Association, Atlantic City, N. J., June, 1914.

Mason, and withdrawing the surrounding loop, we have one double silk strand from one buccal surface to the other. These are replaced by drawing through, by means of this silk, a double silver wire.

On these wires are threaded lead plates, and it is important that the holes should be the right distance apart, so as not to cause buckling of the plates if at too great a distance, and so that the wires will not cut the tissue if too close together. Personally it seems that not enough care is taken in making the holes in these plates, as portions of lead if left, although soft, will irritate the tissues. For this purpose, the ordinary rubber-dam punch of the dentist is used, which leaves a clean-cut hole with smooth surface on the side placed next to the tissues.

Fig. 1.—(From Owen) showing lateral incision.

The wires are then twisted together, one of the posterior with one of the anterior, care being taken that the same wires are twisted on each side. This will bring the parts together with comparative ease if the patient is not too old, or the cleft is not too wide. If the patient is over 3 months old, this operation should not be performed unless the cleft is very narrow. If the cleft is wide in the younger child, I have at times found it necessary to sever the malar process from the maxilla, as recommended by Brophy. This will allow easier approximation.

The palatal process of the maxilla, and horizontal portions of the palate approach each other so that they are almost in contact. The edges should be freshened, being careful to cut completely through the mucous membrane and periosteum; the wires should be tightened, thus bringing the parts in close contact, and completely stopping hemorrhage.

If the premaxilla is protruding, it is best to force it backward into normal position at the same time, not by simply drawing it back, thus causing a bending of the septum which produces obstruction of one nasal passage, or, as is the habit of some operators, simply to make an incision in the septum, and slip one part of the cartilage past the other, which will produce a thick septum, partially or completely blocking one or both nasal passages.

My method, while not entirely original, is to remove a wedge-shaped piece, base down, subperiosteally from the septum, thus avoiding injury to the nerves and blood-vessels; the space from which this is removed is obliterated by forcing back the premaxilla, leaving a septum smooth on both sides. It is necessary to freshen the edges of the premaxilla, and also the maxilla, in the same way as in the case of a single cleft.

The mortality in the early months of life in the hands of the occasional operator, has caused me to give up the early operation altogether. If complicated by harelip, I usually repair the lip during the first few months, and close the palate some time during the second year.

Of all the literature I have consulted, the monograph of Owen is the most valuable. His ideas have been followed mainly in my work. I desire to give full credit for quotations and illustrations.

The operation considered and here described will be that for uncomplicated cleft of the hard and soft palate: the instruments recommended by Owen were used, with one or two exceptions. The Whitehead mouth gag is very satisfactory. The extension piece to the tongue depressor, should be removed for use with children, as it is too long, and crowds the base of the tongue over the laryngeal opening. The two curved steel raspatories, angular scissors, wire-twisting forceps, long mouse-toothed forceps, scalpel, artery forceps (for sponges), Sim's hollow needle, tenaculum, and Graefe cataract knife, complete the list of instruments required.

The patient should be liberally fed during the week preceding operation, and should have the rectum and lower bowel well cleared out by enemas just before operation. This permits withholding everything, even water, by mouth, for seventy-two hours following the operation.

The chloroform can best be given with a Junker inhaler, but this is not absolutely necessary as a skilful anesthetist can keep the case well in hand with a gauze sponge on a convenient carrier.

As the operation is a tedious and back-breaking procedure, the position of the patient is of considerable importance. Owen recommends the head hanging over the end of the table, conceding, however, its interference with the respiration. The Trendelenburg position is more satisfactory, but the legs, when flexed over the end of the table, should be protected by having the table covered with several thicknesses of blanket to prevent injury from pressure during the necessarily long operation. This position will bring the head of the child of 5 at about the middle of the table, waist high, thus enabling the operator to vary his position from time to time. If he becomes wearied by standing, he can work with equal ease and comfort sitting on a moderately high stool.

The blood accumulates in the vault of the pharynx and is easily removed by stick sponges. While an ordinary portable electric light affords a suitable illumination, it multiplies the number of assistants and interferes with the operator's view of the small field of operation; therefore, the electric photophore is much to be preferred.

Before the introduction of the mouth gag a heavy silk suture is passed through the tongue. This is tied tightly across the lower bar of the gag after its introduction and serves to prevent the tongue from falling back into the throat.

Fig. 2.—(From Owen.) *H P* and *S P*, junction. *M P*, mucoperiosteum detached from *H P*. *N M M*, mucous membrane from floor of nares. *S S*, blades of scissors to cut through aponeurosis of membrane.

The first step is the denudation of the margins of the cleft, and epinephrin is first used for the purpose of reducing the hemorrhage to a minimum.

Instead of denuding deeply and cutting the periosteum from the margins of the bony cleft, thus removing a part of the tissue which should be left to form the flaps, only a thin shaving of the mucous membrane should be removed from the edge, but great care should be observed that the margins are denuded through their entire extent. Owen recom-

mends the use of a blunt bistoury, but in my experience there is nothing that equals a Graefe cataract knife. Its keen, narrow blade ensures rapid and perfect denudation and, under suitable illumination, there is no danger of doing damage with its sharp point.

The next step is a radical departure from Brophy's procedure. While in his skilled hands the dissection of the periosteum from the hard palate with his curved

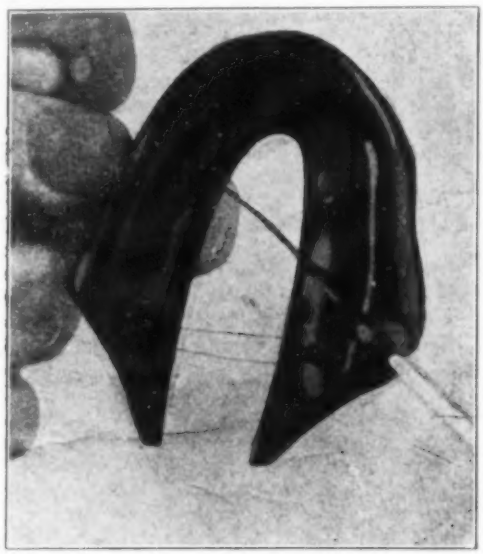

Fig. 3.—Showing manner of passing suture with hollow needle.

periostomes working outward beneath the denuded margins, is no doubt possible, I feel sure that in most inexperienced hands it would result, as it did in mine, in the tearing of the mucoperiosteal flaps.

Figure 1 (from Owen) shows the location of the lateral incisions and they can be made longer than is shown in the figure if necessary.

The closer these incisions are made to the teeth the less the chances of wounding the larger branches of the descending palatine arteries, the broader will be the flaps, and the less likelihood of their blood-supply becoming impaired.

The incisions pass through the mucoperiosteum down to the bone.

With a raspatory of moderate curve introduced through these lateral incisions the mucoperiosteum is readily detached from the hard palate until the end of the instrument appears at the margin of the cleft. An instrument whose curve is more nearly a right angle is then introduced in an outward direction, and by their alternate use the mucoperiosteum is completely detached.

At this time considerable hemorrhage is encountered which is controlled by pressure and the use of epinephrin. The blood is removed from the pharynx by small absorbent cotton sponges carried on Halsted artery clamps or suitable sponge holders.

Figure 2, from Owen, shows the operation up to this point, and the firm connection between the posterior margin of the hard palate and the velum. This is severed by the introduction of a pair of scissors curved on the flat and on the complete severance of this attachment will depend the success of the operation.

When properly severed the mucoperiosteum and the velum hang loose and are easily approximated to the corresponding flap of the opposite side.

Even when this has been done the most difficult part of the operation is yet to follow, namely, the introduction of the sutures. Undue stretching and laceration of the flaps are liable to occur when the old-fashioned curved needle is used and the flaps necessarily held by a pair of forceps.

The introduction of the tubular mechanical needle by Owen was a great saving of time, but its use, even as he describes it, makes it necessary to grasp the flaps with forceps and considerable traction ensues when the needle is withdrawn. In its use, as I shall describe it, the time required to introduce the sutures is reduced by more than one-half and the flaps do not have to be grasped by forceps. Thus bruising and laceration of them is obviated. Owen lays great stress on having an assistant to look after the needle to see that the end of the wire is just inside the tip of the needle ready for emergence when the wheel is turned after the needle has been passed.

It has not been my good fortune to secure such an assistant, and the rapidity with which the sutures can be introduced by the method I am about to describe leads me to keep the needle in my own hand and manipulate it myself. It goes without saying that a mechanical needle of this sort, to be of value, must be a perfect instrument. After having had three instruments submitted to me by various instrument makers, all of which were unsatisfactory, I induced Meyrowitz to send to Weiss, of London, for the needle here shown. I have found it almost a marvel of perfection. The mechanism is very simple and I have never known it to balk or fail. Meyrowitz has since made such a needle using mine as a model.

The advantage of putting the stitches in from b fore backward is that the posterior ones being put in ast

Fig. 4.—Also showing manner of passing sutures with hollow needle.

leaves the operator free to sponge the blood from the pharynx at frequent intervals without pulling on the stitches or palate.

If the posterior stitches are put in first they are liable to become caught and torn out by the frequent sponging.

In introducing the needle from the oral side of the flap, as is usually done, it is necessary to pull the flaps downward, and even when held by forceps con-

siderable difficulty is encountered on account of the small space in which one must work. The procedure recommended is the following:

The needle is entered between the flaps into the nasal cavity, rotated to one side and the point pushed through the flap from above downward, the point entering the flap on its upper surface and emerging on the inferior or oral surface.

(Fig. 3 indicates its position.) As soon as the point emerges, the milled wheel is turned and about 12 inches of the silver wire extruded from its point. The reason for extrusion of such a long piece will be noted as the description proceeds.

If difficulty is experienced in forcing the needle through the flap a pair of forceps, or, better still, the long curved scissors can be pressed against the oral surface of the flap.

The blades of the scissors are slightly separated at their points and through the separation, the point of the needle emerges. The needle is now withdrawn and the point rotated through 150 degrees in the nasal cavity and passed through the opposite flap in exactly the same manner. (Fig. 4 indicates its position.)

It will be noticed that the wire which projects from the end of the needle is folded back on the outer side of the needle in its passage through the second flap and forms an angular loop at the tip of the needle. This loop is increased in size by the extrusion of two

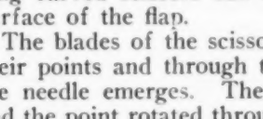

Fig. 5.—Showing sutures inserted.

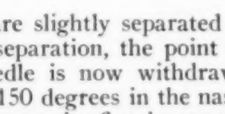

Fig. 6.—Showing sutures tied.

or three inches of wire. The wire is then cut off and the needle removed.

The reason for the long end on the opposite side now becomes manifest. Close to the under surface of the second flap is the kink in the wire made by its being folded back. If this kink is left near the flap, the wire is almost sure to break when it is twisted to tighten the suture. The short end of the wire is now seized and gently pulled out until each projecting end is about 8 inches long. This fine wire pulls through the flaps with perfect ease and no traction or cutting out ensues. The two ends of the wire are grasped by an artery clamp and passed to the anesthetist or an assistant. Thus from seven to ten sutures are inserted, passing from before backward.

Before putting in the last two sutures which hold the uvula, two sutures are passed far out from the median line to prevent the tensor palati from pulling and tearing out the stitches in the soft palate and uvula.

These are shown in Figures 5 and 6. (Also in Figs. 3 and 4.) Instead of being united across the roof of the mouth, as are the other sutures, to prevent their tearing out, they are shotted and their short ends twisted together, as shown in Figure 6. Thus, even should the shot come off, there would still be a loop over the bridge of tissue and little probability of their cutting out.

The after-care of a case requires a nurse of considerable tact and skill. In children, if struggling and crying follows attempts to use the antiseptic spray, it is best to omit it. If possible, absolutely nothing should be given by mouth for seventy-two hours, conversation should be inhibited as much as possible, and children entertained in every conceivable way. Nutritive enemas alternating with large amounts of saline solution passed high into the bowel will maintain the strength and allay thirst.

ABSTRACT OF DISCUSSION

DR. G. HUDSON MAKUEN, Philadelphia: Dr. Emerson has given a good description of a well-known operation for cleft palate. It has its limitations, as all operations on the palate have. Its chief limitation is that it leaves a velum that is too small and tense to perform what has been called its valvular function in respiration, phonation and articulation. Every operation on the palate fails in this respect, because even though a full quota of tissue may be present there must always be some cicatricial contraction in the line of union between the lateral halves. The Brophy operation, however, although a more extensive and serious one, does give us a more useful soft palate. I have seen some of his cases in which the soft palate very nearly fulfilled its normal valvular function. Dr. Brophy has recently made an addition to his operation. In those cases in which tissue seems to be lacking, he enlarges the velum by means of flaps from the posterior pillars, thus making a longer soft palate. As Dr. Emerson says, the operation should be done before the habits of speech have been formed. No operation on the adult palate can change or improve the speech to any great extent; it can only make it possible for the patient to learn how to speak better. It is a difficult proposition to change the habits of one's speech. We all have our speech habits and we cannot change them offhand. The patient with a cleft palate has characteristic habits of speech, which have become, in adult life, a fixed part of his psychical as well as his physical equipment, and they cannot be changed by merely changing the physical properties of the peripheral mechanisms of speech, but only by careful speech training, in which not only new muscles are brought into action but changes are made also in the auditory and other speech centers of the brain. This is an important matter in connection with cleft-palate operations in adults and even in children of 6 or 8 years of age. As I have said elsewhere, I think I can take a patient with a cleft palate and do more for his speech by psychophysical training than can be done by an operation without training. This, however, is not an argument against the operation, but only a plea for the training which must follow it, and I may add that the necessity for the training increases with the increase in the age of the patient at the time of operation.

DR. T. E. CARMODY, Denver: In speaking of the operation for cleft palate, I will take issue with Dr. Makuen, because I have had some cases in which operation late in life has been satisfactory and the patients have obtained a very satisfactory enunciation. However, my practice is to do all the operating I possibly can, and usually it is possible before the fifteenth month—before the child begins to talk—and better habits of speech are then formed. I reported in a recent article a patient operated on, a young woman of 19 years, who had been associated with a nurse for some time, and who left the city and on coming back four months later and calling the nurse up on the telephone asked her to guess who was talking and she could not. So her habits of speech could not have been bad. I have tried Dr. Emerson's lateral incision with good results, but generally it is not necessary, as we usually have enough tissue. I have seen something like 400 cases of my own and with Dr. Brophy and others, and have only seen one case in which there was lack of development. There is only lack of union. Very frequently a flap of nasal mucosa can be used either from the nasal side of the palatal plate or from the septum, and in one case I have used a flap from the inferior turbinate. I think the lateral incisions interfere with the action of the soft palate, because a flap is obtained that is not pliable, and the velum will not act as it

should. Dr. Emerson has given some good methods for the after-care of these patients.

DR. OSCAR WILKINSON, Washington, D. C.: I have used some aluminum plates which are left in for two or three weeks.

DR. LINN EMERSON, Orange, N. J.: As to Dr. Carmody's remarks regarding the lateral incisions not being necessary, that I concede, but the operation which I have reported is done with a view of shortening the procedure. While it used to take me two hours, I can now frequently do it in forty-five minutes. With the use of the Graefe knife and the elevator one can strip it up in two or three minutes, whereas by the other procedure it takes a long time and one is much more liable to tear the flap. As to taking tissue from the turbinate, that can be done, but the disadvantage is that this tissue is so thin that the stitches pull out, and the blood-supply is so poor that necrosis or non-union ensues. As Dr. Carmody has shown, if the flap is loosened enough this tissue is not needed. Another point is to put the sutures in far back instead of too close to the edge. In my first operation I operated four times before I got closure; now it is rare that I have to operate more than once. There is no question of the merit of the Brophy operation, but most of my cases are in older patients. As to the mortality of the early operations: of course the younger the child the higher the mortality. These patients have a low index and since this paper was written I have lost two—one thirteen months old and one eighteen months old. Necropsy failed to show the cause of death. Both died the next day after operation with high fever, 105-6. It is possible that the anesthesia had something to do with it. In the next operation I do I shall use gas and oxygen. Relative to the improvement of speech, I have one patient on whom I operated at 11 years. He came daily for several months for training and Dr. Makuen well lays stress on the importance of that. He now has almost no noticeable impairment of speech.

SO-CALLED CONGENITAL SCOLIOSIS

WITH SPECIMEN, INCLUDING THE THORAX *

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Attending Orthopedic Surgeon, St. Luke's Hospital; Chief, Department of Orthopedic Surgery, Cook County Hospital
CHICAGO

Mery in 1700 published the first case report of congenital scoliosis. Fleischman in 1810 and Meckel in 1816 were the first to assert that this deformity could exist without other defects; this was established by Mühlig in 1829, Rokitansky in 1844, Hohl in 1850, and Förster in 1854.

Recently cases of congenital scoliosis are much more frequently seen and reported by orthopedists. The obstetrician of extensive practice may say he has never seen a case. If so, it is very likely that cases have gone unnoticed because regular or careful examination of the back was neglected. The pediatrician sees children at a period when this deformity is more readily discovered, and is in a position to call attention to it even before the child is sitting. However, many cases are overlooked, or if seen we neglect to attach sufficient importance to the condition, and in this way the number of reported congenital scolioses are less than they should be.

On the other hand, the number of so-called congenital scolioses, which Dr. Lovett[1] has so properly called scoliosis due to a congenital bony defect, are being described frequently, since the congenital defect, even in the adult, and the dried skeleton, tells the story and shows the etiology.

Thus, in considering the etiology of congenital scoliosis we should discard those cases which are the direct result of bony congenital defects. It is well known that such anomalies as numerical variation of the vertebrae, insertion of a wedge of bone in the column, cervical rib, bifurcated rib, absence of a rib, extra rib, Sprengel's deformity, etc., lead to scoliosis. Should we not regard as rightly belonging in the category of congenital scoliosis those cases having another origin than arrested or perverted *bony* development? If so, we have left for consideration the following theories:

1. Heredity.
2. Intra-uterine pressure.
3. Intra-uterine injury.
4. Intra-uterine paralysis.
5. Intra-uterine rickets.
6. Intra-uterine anomalies of muscles.

In considering the hereditary factor, we should be careful to distinguish between congenital and acquired characters. Histories of cases of scoliosis show that frequently other members of the family on the father's or mother's side also suffered this type of deformity. Hereditary congenital lateral curvature, however, should not be confounded with a scoliosis appearing after birth and following, for instance, congenital rickets, which easily could have prevailed in the family of the patient and that of the patient's forefathers because of innutrition and insanitary conditions existing through generations. It seems that such cases are fairly to be regarded as products of the environment, and not congenital in the true sense. The theory of intra-uterine injury calls for no comment, and "intra-uterine pressure" is at best a vague term which seems to be used at present to cover those cases for which no other explanation is at hand. Paralysis *in utero*, if combined with faulty position and uneven muscle pull which would favor scoliosis, is granted to produce it just as in paralysis after birth.

Following a suggestion of Prof. Basil C. H. Harvey, I have been impressed with the fact that the length, insertion and uneven attachment of muscles probably gives a key to the etiology of many of those cases which have no recognized cause.

Professor Harvey kindly permitted me to take the following data from his manuscript notes:

> In 1906 he has noted that in one cadaver the "left trapezius muscle extended from the occipital bone and the spinous processes of the cervical vertebrae to the clavicle and the spine of the scapula. The lower fibers extended from the spines of the fifth and sixth cervical vertebrae and corresponding supraspinous ligaments to the vertebral margin of the scapula above the spine. This muscle on the left side was absent in the thoracic region."

The following cadavers, representing a small series noted consecutively, indicated that the attachment of the trapezius is eccentric in half of this small number; it extended down to:

> The twelfth dorsal vertebra on the right and twelfth on left (Case 10).
>
> The twelfth dorsal vertebra on the right and twelfth on left (Case 11).
>
> The twelfth dorsal vertebra on the right and twelfth on left (Case 12).
>
> The eleventh dorsal vertebra on the right and eleventh on left (Case 13).

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* Read before the Section on Orthopedic Surgery at the Sixty-Fifth Annual Session of the American Medical Association, Atlantic City, N. J., June, 1914.

1. Lovett: Lateral Curvature of the Spine and Round Shoulder, Ed. 2, p. 94.

The tenth dorsal vertebra on the right and eleventh on left (Case 14).

The tenth dorsal vertebra on the right and twelfth on left (Case 15).

That is, the tabulation shows that the trapezius in Cadaver 14 is attached to the tenth dorsal vertebra on the right and to the eleventh dorsal vertebra on the

Fig. 1.—The enlarged left thorax and the contracted right thorax are well shown in the drawing.

left side, and in the fifteenth cadaver to the tenth on the right and the twelfth on the left. In the cadaver noted in 1906 there is no attachment whatever in the thoracic region on the left side. I have also found in the literature one case of congenital scoliosis showing the entire absence of the trapezius on one side.

In another small series among the same notes there is shown some variation in the length of the latissimus dorsi on the right and left side. This muscle extends up to:

The fourth dorsal vertebra on the right and fifth on left (Case 10).

The seventh dorsal vertera on the right and seventh on left (Case 11).

The seventh dorsal vertebra on the right and seventh on left (Case 12).

The sixth dorsal vertebra on the right and fifth on left (Case 13).

The sixth dorsal vertebra on the right and sixth on left (Case 14).

The sixth dorsal vertebra on the right and sixth on left (Case 15).

The question of the frequent occurrence of uneven muscle attachment because of inequality in length of two opposing muscles is borne out by the majority of dissections, making the asymmetry of muscle groups almost the rule.[2]

Such anomalies must be considered as cause for beginning asymmetry, congenital and acquired, whose exaggeration by position would produce scoliosis. On the other hand, there are cases of scoliosis whose dissected back muscles show no anomalies; one case found on the dissecting table later revealed tuberculosis as the cause. However, it cannot be contended that all subjects with anomalies of muscle length or attachment necessarily have scoliosis.

Yet it is reasonable to allow that such facts as the tabulations presented show should justify a theory based on such anomalies of muscle group as is here mentioned. These considerations indeed raise the question whether there are any cases of congenital scoliosis in any other sense than that the deformity is induced by some organic anomaly giving rise to an inclination to deformity.

So far as I know, the theory that scoliosis may originate from an asymmetrical attachment of muscles has not been advanced. I have presented it at some detail here because I think it ought to have a place in the consideration of the general etiology of cases of this class. As a matter of fact, the case which I am to present is not of this class, but one due to bony defect of the vertebrae and of the ribs.

REPORT OF CASE

History.—M. G., a girl, aged 5 weeks, entered the Cook County Hospital in 1913. The parents complained of inability on the part of the child to nurse because of a deformity of the lips. The labor was normal at nine months. The father, mother and her three sisters are all living and normal in every respect; the only other child in the family is normal. The young, healthy-looking mother never had a miscarriage. Venereal history negative. Examination showed a child poorly nourished and badly deformed by congenital defects. There was double harelip and cleft palate; absence of the globes of the eyes, and right lumbar, left dorsal scoliosis, rigid and with rotation. Several operations for harelip and cleft palate were performed. The child was in the hospital for about fifty days and died of pneumonia.

The Scoliosis.—The deformity of the spinal column was marked not only when the child lay in the crib, but also when she was held up by the arms and head with stretching of the back which would have straightened a flexible curve (Fig. 1). Palpation of the ends of the spinous processes in the living child revealed a long curve in the dorsal-lumbar region, which was to the left. Rotation bulging of the left posterior ribs was markedly evident even when the shoulders and the head were on the stretch, and this rotation increased when the body was flexed. The left anterior chest wall was prominent, the right side concave. The crests of the ilia were uneven; the left shoulder was much higher than the right, and the scapula on the left side was elevated in a way to suggest Sprengel's deformity, having its position in regard to the right scapula, thorax and clavicle, raised, and its inner border turned toward the spine.

Fig. 2.—Back of specimen, showing the left rotation and bulging, the low right and high twisted left scapula.

The Specimen: The Back: When the skin was removed and the muscles exposed, the rotation on the left side of the thorax and the extreme elevation of the left scapula attracted attention by their deforming effect. The spaces

2. Poirier and Charpy: Traité d'anatomie humaine, ii, 496: "Asymmetry is almost the rule; usually one of the trapezius muscles descends lower than the other" (L'asymetrie est presque la règle; ordinairement, l'un des deux trapèzes descend plus bas que l'autre.)

between the ribs on the left side are much larger than on the right side, and the angles formed with the vertebra and sternum are unlike on the left and right side. Taking a common point on the spine as *P* (Fig. 2), and measuring to the inferior angle of the left scapula, gives a distance of 5 inches, while the distance from the same point to the inferior angle of the right scapula is only 3 inches. Measuring from the same point to the left, to the most distant point on the eighth rib is 4 12/16 inches, while to the right, to the eighth rib it is only 3 8/16 inches.

Fig. 3.—Anterior view of specimen, showing the slanting direction of the sternum; the twisted, leaning thorax; dipping of lower line of thorax on right side as compared with the lower edge of the left thorax. Note that the left shoulder girdle is nearer a line drawn to the pelvis parallel to the table than are the cervical vertebrae.

The Anterior View of the Body.—The anterior-superior spines of the ilia are not parallel to the surface of the table on which the specimen was placed (Fig. 3), the right trochanter and ilium are higher than the left, and the spinal column is seen to incline to the left, beginning at the pelvis and extending to the eleventh dorsal vertebra before it bends to the right. The thorax is inclined to the right, slightly rotated in the same direction. The wide spaces between the ribs on the left side and the narrow spaces on the right side are plainly seen from this view. The left shoulder is much higher than the sternoclavicular joint.

The Roentgenogram.—This was taken from the specimen by Drs. Harting and Hubney. It shows the entire pelvis tilted to the left; even the heads and necks of the femur show this tilting. The curve is seen to be a long total curve to the left beginning with the last lumbar and including the entire column, having its apex at a point represented by the tenth, eleventh and twelfth dorsal vertebrae.

The Vertebrae.—There are six lumbar vertebrae apparently normal in all respects, judged from information obtained from the roentgenogram. The dorsal vertebrae are shot to pieces, not one of them appearing to be entirely normal. The right halves of most of them seem defective and show the mechanical cause for the scoliosis. The eleventh and tenth present only the left half of the vertebrae, as do the eighth and second, while the remaining show all grades of incomplete bifurcated portions of the right side of the vertebrae.

The Ribs.—The ribs on the left side are twelve in number and appear fairly normal in shape and size. The various angles they make with the vertebrae vary considerably and the attachments are irregular and not normal, in most instances on account of partial absence or changed inclination of the vertebrae. On the right side of the thorax there are eleven ribs only, the twelfth being fused with the eleventh, both of which are attached to the tenth. Each is narrow and irregular, with faulty attachment ends, and all are crowded together, diminishing markedly the capacity of the chest.

Clavicle.—The right clavicle shows a marked twist.

Dimensions.—The following measurements will give an idea of the comparative dimensions of the left and right sides of the thorax:

Measurement from the sternoclavicular notch to the junction of the fourth rib with its cartilage (Fig. 3): left, 5 6/16 inches; right, 2 15/16. Measurement on the circumference between a point on the sternum at the junction of the fourth rib and a given spinous process: left, 5 5/16 inches; right, 4 13/16 inches. Measurement to determine depth of thorax was taken by pushing a probe through the anterior chest at a point between the fourth and fifth ribs at the junction of the rib and its cartilage and pushing the probe through on the left side to the convexity of the curve and on the right side to the concavity of the curve (Fig. 3): left, 2 5/16 inches; right, 2 10/16 inches.

Further description of the bony framework will be given when the specimen is dissected and the skeleton cleaned up, which is deferred in order to allow those who are interested in the case to examine the thorax closely before farther mutilation.

31 North State Street.

ABSTRACT OF DISCUSSION

DR. ROLAND MEISENBACH, Buffalo, N. Y.: Those of us who are constantly working with scoliotic cases in children and seeing the roentgenograms of the cases must be impressed with the fact that the anomalies in the bones are not so great as one would generally suppose, as compared with the musculature of the child and the curve of the spine. As the child grows older, the bones, especially the bodies of the vertebrae, become malformed. The irregular muscular development, I believe, occurs very early in some cases, and is induced in others, and is a very important factor in the etiology of scoliosis.

DR. REGINALD H. SAYRE, New York: These congenital cases of scoliosis must be more frequent than we have generally been led to believe. I have seen, I am certain, half a dozen that I can remember at present, and in those that have occurred since the days of the Roentgen rays, it happens that all had skeletal abnormalities. I know that these are congenital cases, because I saw them within a few weeks of birth, and the deformity was very marked at that time. Some have fused ribs; some, absence of ribs; some, extra vertebrae, or V-shaped vertebrae; and one, a marked distortion of the pelvis, which was very much warped and twisted. The deformities of the pelvis do not attract our attention so much as they should in connection with the prognosis whether these patients should or should not get married. I have at present under my care a girl whose father is a doctor. He is really worried, not so much about the shape of her thorax as about that of her pelvis; and he wants to know whether treatment will correct that, so that she can get married. That is the point that the obstetricians think of, but that the orthopedists do not think of so much in looking after these cases.

Fig. 4.—A photograph taken at about 3 weeks of age. The child died of pneumonia when 3 months old. Traction is being made above by the nurse as she holds the shoulders and head, and below by the doctor who is stretching the left leg. The left dorsal curve and the rotation deformity are well shown.

On Style.—Every man will read a book with more pleasure or even with more ease, if it is written in fairer characters. Therefore every man will also listen more readily to what is spoken, if it is signified by appropriate and becoming words. —*Epictetus.*

FRACTURES OF BOTH BONES OF THE LEG*

FRANK E. PECKHAM, M.D.
PROVIDENCE, R. I.

Since writing a paper last year which included this fracture, but without going into the details very much, I have had a number of inquiries regarding them which gave the incentive to elaborate the subject somewhat.

In the first place, just as in cutting operations, as these fractures keep coming, a proper technic should be developed, and the Roentgen-ray part should be the same in practically all of them. Each fracture is a definite mechanical problem and the only way to get exact knowledge of the problem is to have roentgenograms in at least two, and sometimes more, views. Then it is possible in a fracture of both bones of the leg to know how the fragments are placed, how much riding by, etc., and from this knowledge to map out exactly what moves are necessary, not only to reduce but also to get an end-to-end position, if it can possibly be done. If at first there is some swelling, the leg may be placed in a pillow splint with elevation, when it should rapidly disappear. This splint also prevents undue motion which might irritate the tissues as well as cause some pain. For the setting, the patient should be under an anesthetic for complete muscular relaxation. The mechanics for the reduction must be precise, must really accomplish what is desired and must hold the bones accurately end to end while (in my own cases) plaster of Paris is properly applied and set.

The mechanism which thus far has served me well consists of a Bradford frame with an upright or bar for counterpressure against the perineum (Fig. 1), and a windlass arrangement at the opposite end to make traction on the leg (Fig. 2). After the patient is in position, the foot and ankle are bandaged with a cotton bandage to prevent swelling (Fig. 1), and then the foot and leg are covered with sheet wadding, preparatory for the plaster of Paris (Fig. 2). About the foot and ankle is placed full thickness gray felting, and over this the webbing is arranged and attached to the windlass for traction (Fig. 2). The windlass is made in two sections so that the foot on the well leg may be attached and pulled on separately, thus preventing the pulling around of the pelvis and interfering with firm traction on the affected side. Cross-bands of cotton bandages are put in two or three places, one of them being directly under the fracture, thus supporting the leg (Figs. 1, 2 and 3).

A careful study of the roentgenograms has shown just what is to be accomplished. A sufficient amount of traction is now applied to simply straighten the leg when the operator, who is grasping the leg at the point of fracture, with both hands, gently elevates, thus slightly angulating the fragments. Experience teaches when, in this way, the bones, especially the tibia, are end to end. Then as traction is increased, the leg is gently lowered until it is perfectly straight on the supporting cross-bands. The strong traction necessary also prevents the leg from sagging. If the fracture, particularly of the tibia, is transverse and the frag-

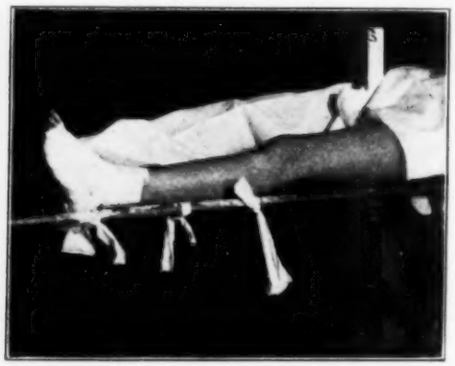

Fig. 1.—Post (*B*) for counterpressure and the foot and ankle bandaged.

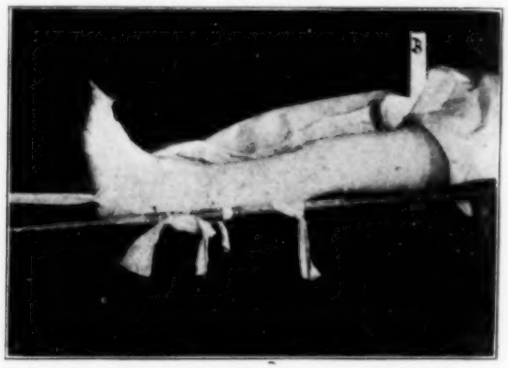

Fig 3.—Plaster applied with the traction still on.

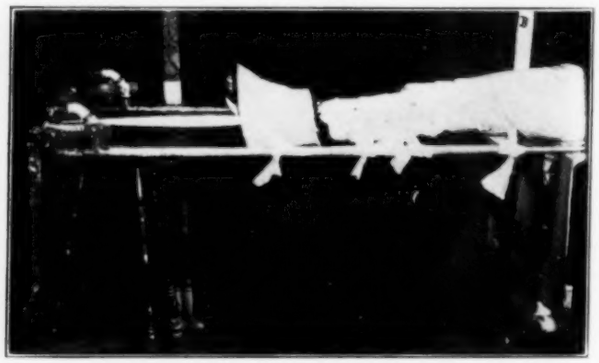

Fig. 2.—Post (*B*) and the leg covered with the sheet wadding. The felting surrounds the foot and ankle and the traction is applied.

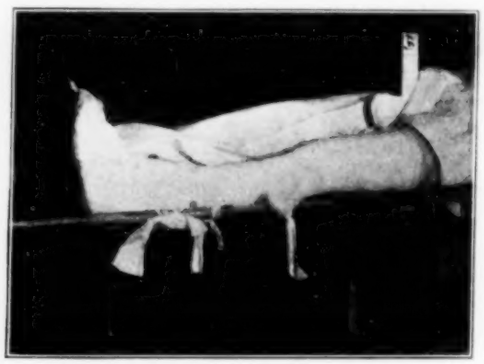

Fig. 4.—Plaster set and traction removed.

* Read before the Section on Orthopedic Surgery at the Sixty-Fifth Annual Session of the American Medical Association, Atlantic City, N. J., June, 1914.

ments are end to end, such strong traction is not necessary; but if the fracture is oblique, full and strong traction is necessary all the time and until the end of the application of plaster. If the fracture is at the lower end, the webbing for the traction should go downward over the outer malleolus; in this way, not only the tibia, but also the fibula can be gotten into apposition, if the fracture is higher up, the traction webbing should go down over the inner malleolus, and in some cases it must go down over both malleoli, in order to pull equally on both bones. Usually in simple fractures, both bones can be arranged, but if perchance the fibula is not quite controllable, the tibia can be gotten into perfect position and the fibula ends in contact, if not in apposition, in which case the fibula should take care of itself as far as union is concerned.

Fig. 5.—A comminuted fracture of the tibia with a simple fracture of the fibula (Case 1).

Fig. 6.—The lateral view after setting (Case 1).

When it is thought that the ends are in apposition on the frame and traction applied, a roentgenogram must be taken in at least two views, to be sure of such fact. If it is not all right, a glance at the plate shows just what further work is to be done, and it must be done then and there. When it is all right and actually demonstrated (by Roentgen ray), the mechanics as described will hold while plaster of Paris is applied and allowed to set. Then still another picture must be taken through the plaster, to see if the fragments have remained in position. The plaster is applied to the whole leg, up to the groin and including the foot.

This work, in private practice, is usually done at the office, and as the time is not long, the patient quickly recovers from the anesthetic and may be taken home easily in a machine. If an automobile is not obtainable, the ambulance may be utilized. It is always urged to bring the patient to the office, because the powerful Roentgen-ray machines are there, and the facilities for developing the plates are better. If, however, for some reason the patient insists on having it done at home, a portable Roentgen-ray coil is set up at the bedside and the plates developed in a darkened bathroom or even in a clothes closet.

If now, the last roentgenogram taken through the plaster shows that the bones have not been quite perfectly held, or if the picture, which is again taken at the end of the second week, shows that the position is not satisfactory and any change has to be made, this is the time to make it, because it is at about this time that material begins to be thrown out which is later to become calcified, and thus make a solid and bony union. This particular time is selected because when this material begins to be thrown out, the fragments may be readjusted and this callus material is of some assistance in sticking the ends of the bones together. This readjustment may be so slight that an anesthetic is unnecessary, or if much is to be done, an anesthetic is necessary. If readjustment is made, it means also that another plaster cast should be applied. At the end of a month from the fracture, this cast may be bivalved, so that the posterior half may serve as a splint for two or three weeks longer, depending on the case.

If the mechanics have been carefully applied at the first setting, there is nothing to be done until this bivalving of the plaster.

Instead of showing any number of cases, I shall present only four.

CASE 1.—This was a comminuted fracture of the tibia, and a simple fracture of the fibula (Fig. 5). Figures 6 and 7 show the bones pulled down into position.

CASE 2.—This was a comminuted fracture of both bones just above the ankle joint. Figure 8 is the worst view, and

Fig. 7.—The anteroposterior view of tibia after setting (Case 1).

Figure 9 (also the worst view) shows the bones after being pulled down into position and quite some time being spent in manipulation while the traction was applied.

CASE 3.—This was a compound comminuted fracture of both bones which suppurated (Fig. 10). This case was reported at the 1913 meeting of the American Orthopedic

CASE 4.—This laboring man presented himself fifteen months after the accident still unable to stand on his feet for very long intervals of time without pain and consequently still unable to work. The roentgenogram shows the bones sagging backward and inward, representing, to my mind, a necessarily weak union and hence a sufficient excuse for his disability (Fig. 13).

The treatment of fractures offers a very fascinating field for men of mechanical ability, and the class of fractures here treated, and indeed all fractures should be studied carefully not only to evolve methods whereby the (open) operative treatment may be obviated, but also that the mechanical treatment may give better results without the risks.

Fig. 8.—Comminuted fracture of tibia and fibula just above the ankle (Case 2).

Fig. 9.—The bones pulled down into position (Case 2).

ABSTRACT OF DISCUSSION

DR. H. W. ORR, Lincoln, Neb.: Some years ago, having to treat such a fracture as Dr. Peckham has described, I had occasion to use a method that I have since used with great success, namely, having first applied, as carefully as possible, a perfectly fitting cast on the foot to within a few inches of the point of fracture, I then apply plaster above the fracture, including the knee, which is flexed; so that I can make traction against the fracture and the knee. Then I manipulate the fragments of the tibia and fibula to as perfect a position as possible, and apply plaster over the point of the fracture. Thus, the plaster at both ends having set, and the fracture being under control with traction on the two completed portions, the final instalment of plaster is put on over the point of fracture, with sheet wadding beneath it. The patient referred to was in the country, and could not then be moved; but he was brought to town a week later, to have a roentgenogram taken. It was found that the position was perfect. No change was made, and I got a good result. I have done this in other cases of fracture of the leg and have always secured equally good results, without pressure necrosis. I have tried it occasionally in fracture of the femur and arm, and have generally obtained as good results; but in fracture of the leg, I have had a splendid result in every case.

DR. FRED H. ALBEE, New York: It is important to treat these cases mechanically, if possible, without operation; and especially to avoid the use of the metal or Lane plate. Within the last few years I have seen a large number of ununited fractures of the tibia in cases in which the Lane plates had been used. How much these plates had to do with influencing non-union, I do not know; but it seems probable that they had something to do with it. For instance, I cite a case in which there was a fracture of the tibia and two of the fibula. The tibia was plated, and

Fig. 10.—The first and second pictures show the fractures, while the third one shows how it looked after setting (Case 3).

both fractures in the fibula were untouched. The one on which the Lane plate was used, failed to unite, while both of the others united perfectly. I believe that a large percentage of these cases can be controlled by the mechanical methods mentioned by Dr. Orr, Dr. Peckman, myself and others. The Lane plate, even if there is no suppuration, may effect non-union. In a case of fracture of the tibia the Lane plate was used and a large sequestrum came out. There were 2½ inches of the shaft of the tibia removed on account of infection. It was the entire lower end of the upper fragment of the tibia included in the upper end of the Lane plate. As the patient was most anxious to get back to work, we put in a graft ten weeks after removal of the sequestrum, although there was still a sinus. The graft held in, spanning this 2½ inches of space; and to-day the patient has a very firm leg, which he uses constantly in his work. In the presence of a sinus and a loss of 2½ inches of the tibia, union with the preservation of the full length of the leg, could, I believe, have been accomplished in no other way except by the inlay bone graft.

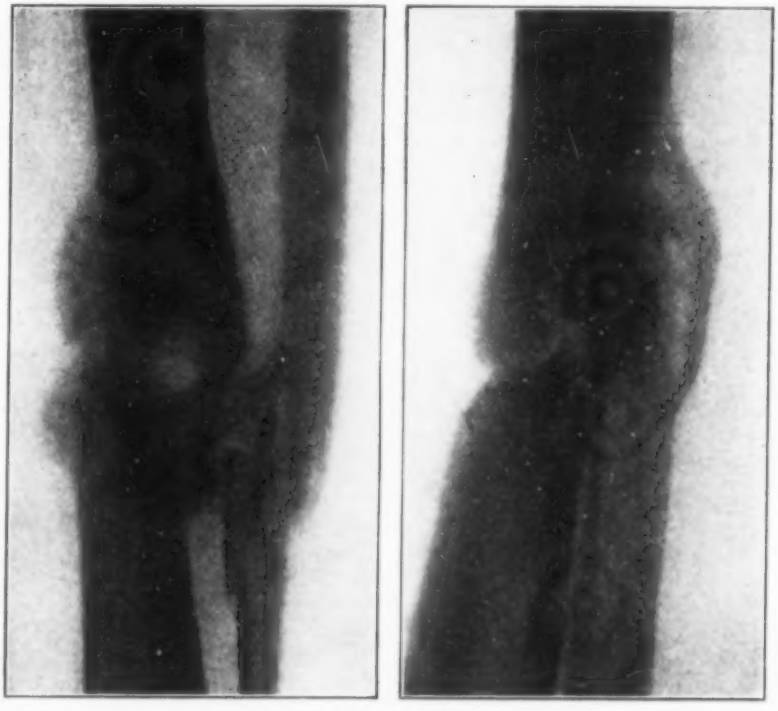

Fig. 11.—About four months after the injury (Case 3).

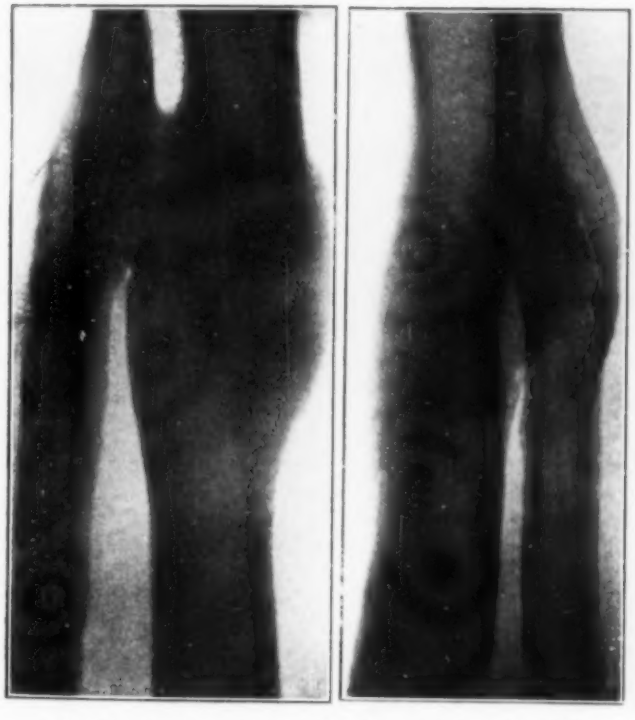

Fig. 12.—About seventeen months after the injury (Case 3).

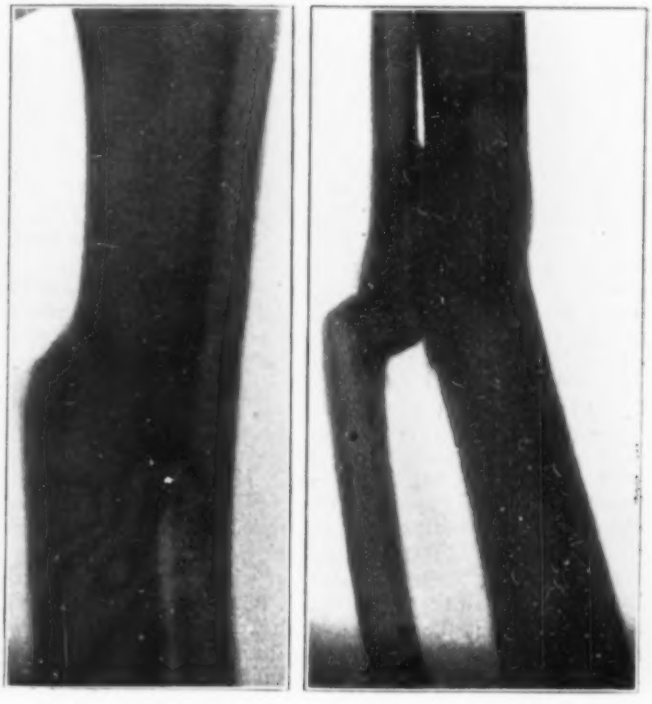

Fig. 13.—Fracture of both bones of the leg fifteen months after accident (Case 4). The bones are sagging backward and inward. (How not to do it.)

DR. S. C. BALDWIN, Salt Lake City: I am afraid that Dr. Peckham has overlooked, to some extent, the future use of the limb after the healing of the fracture has taken place. One of his roentgenograms shows twisting of the lower fragment on the upper fragment, and several of the plates show that the lower fragment of the fibula was overriding the upper fragment. If these cases are watched afterward, it will be found that many come back for the relief of pain in the feet, as the result of a present or an approaching flat-foot, because of the weight-bearing being on the wrong part of the ankle. As I have before remarked, I suppose that none of you has ever seen a painful foot on which the patient walked in the position of varus. It is only in the position of valgus that I have seen painful feet. If the fracture is placed in a position in which the lower fragment of the fibula overrides the upper fragment, there will be, in all probability, a condition of valgus later on. Also, when the fracture is put up in such a position that the lower fragment of the tibia is twisted outward, a condition of valgus will come on later, due to this position. It is important to put up all fractures of either the fibula or both bones of the leg in a position of varus. Dr. Orr's suggestion with regard to making traction through the plaster dressing is an important one. I have found in a number of

cases that extension made with the cast on is very much more comfortable to the patient than traction made on the foot without the plaster cast.

Dr. John Ridlon, Chicago: I wish to utter a word of caution against putting on a plaster boot and making traction on it. The heel very easily becomes sore from the constant pressure used in making traction on the plaster boot and maintaining it by the plaster boot and a fixed point of the bone. When a patient complains of the heel or the dorsum of the foot, the matter should be at once investigated. I had the misfortune in one case to have a necrotic spot produced on the heel as big as a silver dollar, which took four months to heal. It is a beautiful way to make traction; but the padding must be very thick, and great care exercised lest necrotic spots appear.

Dr. J. D. Griffith, Kansas City, Mo.: We must be, and are, exceedingly interested in all this fracture work. We must remember that the public to-day expects 500 per cent. more than it did thirty-five or forty years ago. We are now not only more liable to complaint from the public, but also to be cautioned by the attorney for the patient that we shall be brought up before a judge to decide whether or not the fracture was properly treated. Nowhere in the body do we get into more trouble than in fractures between the foot and the knee, with the exception of the ordinary common Colles's fracture; and this is the place where the individual feels the pain. He will then hunt up a shyster attorney to bring suit on account of the pain in the foot after a fracture of the tibia or fibula. The roentgenogram, which he has succeeded in getting in plate or picture from the other man, shows that he has not a perfect line in one position or the other. If he gets hold of the wrong one, or the worst one, this will raise a row. Every now and then, in making this forced traction that Dr. Peckham speaks of, on the Bradford frame or in any other way, we do not always know the condition of the patient's musculature and ligamentous structures as we should. I was unfortunate in one case, in which, while making this traction, the following day—or shortly afterward, within two or three hours—there was a sharp, acute, synovitis of the knee-joint. I made up my mind that in this case, although the fracture was at the juncture of the lower and middle third, I had made traction enough to frazzle or nearly tear in two the lateral ligaments of the knee; and it was six or eight months before the patient could put weight on the knee without pain. I came near getting into a lawsuit over this case, hence, this word of caution. This is an exceedingly interesting phase of the subject; because we are continuously advancing, and our education of the people is now such that they quickly learn every thing that we should do.

Dr. F. J. Cotton, Boston: I agree entirely with Dr. Albee. Dr. Peckham's work is interesting, not only in general, but also because it is the way by which we can avoid non-union in the lower half of the leg, which has been annoying us for so long. Frequently cases of non-union have been observed after the use of Lane plates, and a good many cases have occurred without previous plating. It seems to me that it depends on poor reduction; and that our way out of the difficulty depends on careful mechanical work, so as to get an exactly true position and to obtain primary healing, even in this poorly nourished region of the body. This is the only way to avoid the cases that come to us in such large numbers later on.

Dr. F. E. Peckham, Providence, R. I.: So far as Dr. Orr's method of treatment is concerned, I distinctly stated in my paper that while this is my method, the other may be equally good. I cannot use Dr. Orr's method so well as my own because I am not sure of my alignment after the foot is encased in plaster. This statement that these cases must be clinically in alignment also answers Dr. Baldwin. I think that he must have misread the roentgenogram, because these fractures are in alignment clinically, and the weight-bearing of the patients is all right. Dr. Ridlon's caution is well given. I have sorrowed for the same reason that he has. I had a case of a bad slough on a heel; but I have found that with the thickness of the felt that I am now using, I have, so far, been able to avoid such accidents. Nevertheless, that is an important point. The heavy gray felt seems to overcome this difficulty.

ANKYLOSIS OF THE ELBOW

WITH REPORT OF FOUR CASES TREATED BY ARTHROPLASTY*

W. RUSSELL MacAUSLAND, M.D.

Surgeon-in-Chief to the Orthopedic Department of the Carney Hospital

BOSTON

Ankylosis of the elbow is probably more objectionable than ankylosis in any other joint in the body. Elsewhere, while stiffness is objectionable, there is, nevertheless, an advantage gained in obtaining stiffness in a good position, more particularly in the hip and knee joints. In the hip, for example, we try to get extension and abduction, realizing that flexion and adduction are deformities interfering with function. In these joints, the end-results of arthroplasties are not so certain. In the elbow, however, there is no position in which ankylosis will not interfere with function.

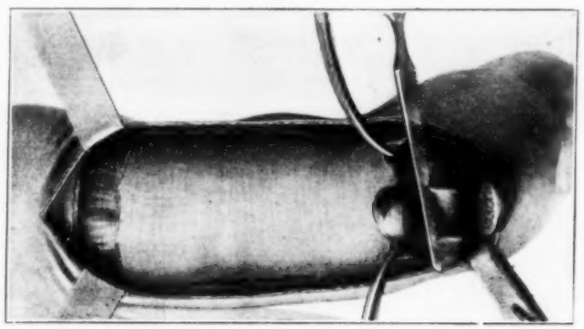

Fig. 1.—Arthroplasty (Murphy). Skin and fat dissected to either side. Fat flap below skin to triceps elevated. Ulnar nerve dissected out and retracted by gauze. Olecranon tip sawed through and pushed up. End of humerus being sawed off.

Ankylosis is in the main the result either of infection or of trauma. The former may be caused by various organisms. When the onset is sudden and the course severe, the causative agent is usually the pneumococcus, gonococcus or streptococcus. Ankylosis may, however, result from a polyarticular arthritis, of insidious onset and progressive course. In the former, the resulting ankylosis is usually bony; in the latter, at least at first, it is fibrous.

Following trauma the ankylosis is commonly the result of a dislocation fracture with wide displacement. The ankylosis result is in this case due to mechanical interference. The hematoma formed at the time of the trauma organizes, forming considerable exuberant tissue; ankylosis finally resulting is fibrous.

Various methods have been tried to remedy this ankylosis. Wolff attempted to correct the deformity by removing all the exuberant tissue. This method has usually been attended by poor results, owing

* Read before the Section on Orthopedic Surgery at the Sixty-Fifth Annual Session of the American Medical Association, Atlantic City, N. J., June, 1914.

* Because of lack of space this article is abbreviated in The Journal. The complete article appears in the Transactions of the Section and in the author's reprints.

largely to the inaccessibility of the part and difficulty of approach.

Various foreign substances have been used by different men to separate the parts. Gluck used ivory pegs, Pupovac magnesium sheets, Baer[1] chromicized animal membrane. These have been found unsuccessful and have been largely abandoned. The inabsorbable

Fig. 2.—Line of incision.

material acts as a sequestrum and later gives rise to irritation. The Baer membrane has not been successful in my hands because of reankylosis after the rapid absorption of the membrane.

The interposition of soft tissues was first used in a case of temporomaxillary ankylosis in 1893 by Helferich,[2] who interposed part of the temporal muscles.

In the elbow the first operation on record is that of Quenu[3] in 1902, who resected extensively the inferior end of the humerus and the superior end of the forearm, and detaching the anterior ligament and doubling it with a few fibers from the brachialis anticus, fixed it against the bony surface of the humerus with three sutures to the fibrous posterior parts, keeping the parts in plaster fifteen days. He reported a good functional result.

Murphy[10] first used his fascia method in October, 1901, on a knee joint. A large layer of fascia lata with a thin layer of muscle tissue attached was dissected from the outer surface of the vastus externus, with its base below and anterior. A small flap of fascia covering the vastus internus was dissected free and placed between the patella and the femur. He first mobilized the elbow by this method in 1904 in a case of ankylosing arthritis. A pyriform flap of deep fascia was dissected from the posterior surface of the triceps. The flap was 4½ inches long by 2 inches wide at its upper end and received its blood supply from a broad pedicle which remained attached to the muscle and fascia just below the level of the olecranon. After the bony parts had been remodeled, the fascia was drawn down and turned onto the joint around the inner margin of the olecranon. The proximal portion of the flap covered the trochlea and lined the olecranon depression and the lesser sigmoid cavity, while the distal portion covered the external condyle. Subsequent events showed that the flap was not carried sufficiently high on the anterior surface of the humerus to permit adequate flexion of the joint. Five months later, the patient could pass his hand through an arc of 5 inches. Pronation and supination were about one-half normal. His second case was reported two months after operation. The hand could be moved actively through an arc of 3 inches and the elbow forcibly flexed to an acute angle and extended to 160 degrees. Pronation and supination were approaching normal.

I believe from my experience thus far that there are certain objections in dealing with the fatty tissue used by Murphy, such as embolus, fatty necrosis from poor circulation and as happened in Cases 1 and 2, skin necrosis due to the use in the flap of the tissue holding its blood-supply. I, nevertheless, report these cases, citing my fat and fascia method in the first two and the transplantation of fascia lata in the third and fourth, a procedure much more surgical in appearance and with development in technic I am sure more satisfactory in final results.

CASE 1.—M. R., woman, aged 34, referred by Dr. Hussey of Holyoke. Family history negative. She has had attacks of rheumatism for the last thirteen years, affecting ankles, elbows and knees. These were affected nine years ago, and were operated on one year later. The right wrist was attacked five years ago, the left wrist and knee six months

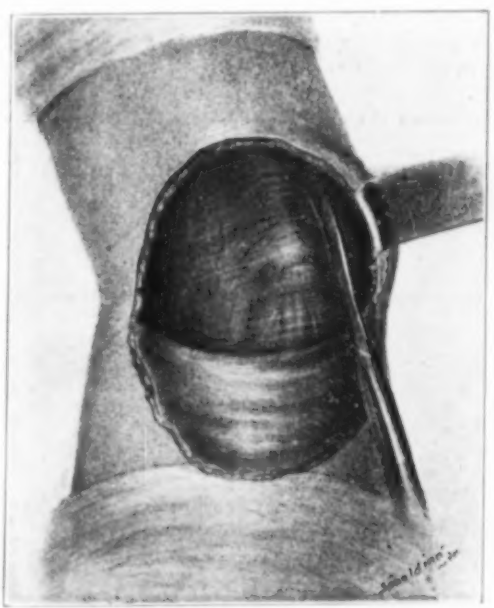

Fig. 3.—Dissecting out ulnar nerve.

ago. Examination revealed a well-developed and nourished woman. Heart and lungs negative. Right knee ankylosed with scars on either side. Both knees slightly flexed Right ankle, contractures. Ankylosis with some contracture of the Achilles tendon. Right elbow ankylosed in about 125 degrees. Left elbow, motion good with exception of 10 degrees limitation in extension. Patient was admitted to the orthopedic service of the Carney Hospital, Sept. 6, 1910, and received rest, compression strapping for the knees, and spiral strapping for the feet, together with aspirin and flannel bandages. Under this treatment very slight improvement took place in

1. Baer: Am. Jour. Orthop. Surg., 1909-1910, vii, 1.
2. Helferich: Verhandl. d. deutsch. Ges. f. Chir., 1894, xxiii, 504.
3. Quenu: Bull. et mém. Soc. de chir. de Paris, 1902, xxviii, 724.
10. Murphy, N.: Tr. Am. Surg. Assn., 1904, xxii, 313.

the knees and feet. In October, on account of the swelling and bogginess of the left knee, an arthrotomy was advised.

October 19, ether operation, Dr. MacAusland. Incision about 4 inches long, on the inner side of the left knee, extending through the fascia and capsule into the joint. The synovial fluid was thickened and viscid, and a large lipoma

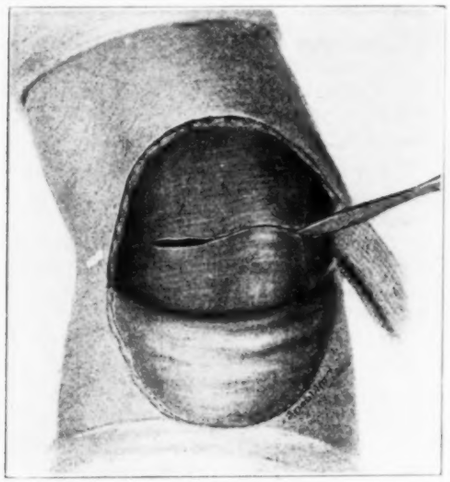

Fig. 4.—Cutting through muscle and fascia to joint.

present in the anterior part of the joint which was removed as well as many of the small fringes, and the joint washed out with salt solution. The incision was closed in the usual manner. Daily manipulations followed this operation, beginning on the fifth day, and an uneventful recovery took place as regards the knee.

As the right elbow was stiff and in a very ungainly position, an arthroplasty was advised. Nov. 9, 1910, ether operation, Dr. MacAusland. An incision was made extending from just below the right shoulder down the back of the arm

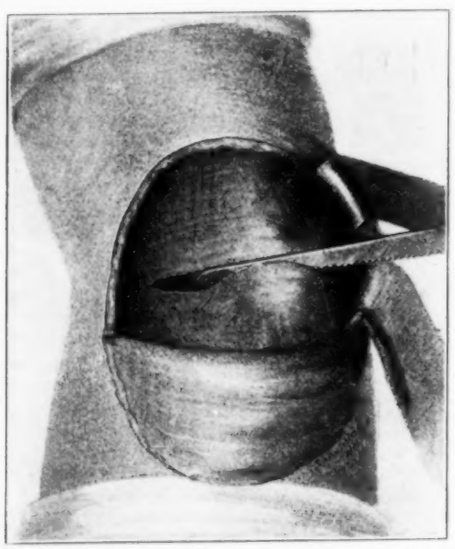

Fig. 5.—Sawing through olecranon tip and end of humerus.

to about 3 inches below the elbow joint (Fig. 1). The skin was dissected off at each side, and a large flap of fat and fascia just above the olecranon process freed. The right elbow joint was then opened by a transverse incision across the olecranon and through the capsule. The end of the humerus was excised and the radius and ulna rounded off with a file, making an artificial joint. The flap was then turned from the back of the arm to the inside of the joint and sutured there by heavy catgut, and the olecranon process with the triceps tendon was put through a slit in this fascia and united to the ulna by heavy chromic catgut sutures. The skin was closed with interrupted catgut, and silkworm-gut.

Nov. 10, 1910, the right hand was considerably swollen and painful, for which pressure and hot fomentations were applied. The skin on the upper part of the arm became somewhat necrotic from poor circulation and later sloughed.

November 21, the stitches were removed.

November 23, dry dressing, wound cleaned.

November 30, passive motions started daily. First attempt was made at motion, when 30 degrees were attained.

December 7, doing well; gaining motion gradually.

Dec. 24, 1910, massage to hand, forearm and shoulder.

Jan. 11, 1911, about 30 to 40 degrees motion in flexion and extension obtained. Heavy granulation tissue.

January 18, discharged from the house. Dressings to be done at home.

Feb. 28, readmitted to the house for manipulation. Normal motion was obtained.

March 13, 1911, discharged to continue with massage, manipulations at home. Since this time patient has been seen

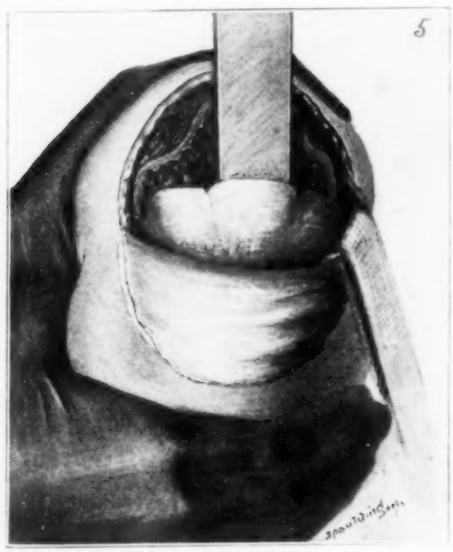

Fig. 6.—Splitting off tip of olecranon with chisel.

in the out-patient department. There is practically no lateral mobility, and the end-result is perfect function.

CASE 2.—F. P., woman, fell and injured elbow, March, 1908. The injury was treated as a sprain and put in splints for about a week. The elbow was discolored and swollen. Liniments were prescribed for the stiffness with no effect. She was able to go back to work in the course of a few weeks, having only slight pain and stiffness, but as time went on, the motion shut down. She received osteopathic treatments for a month without any result. In 1908 she attended the hospital clinic, where roentgenograms were taken, and the arm kept under observation for six weeks. During this time the elbow seemed to be stiffening more and more. Patient entered the orthopedic department of the Carney Hospital, Nov. 17, 1908, and at that time had about 30 degrees motion, but was unable to flex the arm beyond a right angle.

Nov. 18, 1908, a 4-inch incision was made between the external condyle and the olecranon, and posterior displacement of the epiphysis of the humerus was found which, with the callus present, prevented extension. The projection of the humerus forward prevented the flexion beyond a right angle; as much as possible of the exuberant bone was removed.

Nov. 20, 1908, the second day after operation, she had a great deal of swelling and pain in the fingers. The plaster cast was therefore removed. Patient had lost all motion of the fingers owing probably to the forcible manipulation and the large amount of swelling. The plaster was unfortunately allowed to remain on for three days and a paralysis developed.

Dec. 2, 1908, patient was seen in consultation with Dr. Bullard, who considered the case one of Volkmann's paralysis.

Dec. 3, 1908, received daily massage and baking.

Feb. 9, 1909, entered the orthopedic service of the Carney Hospital and was recommended to have a manipulation under ether.

Feb. 10, 1909, ether manipulation, Dr. MacAusland. The right forearm was forcibly flexed and extended through an arc of about 60 degrees, during which the adhesions were felt to break up.

Feb. 14, 1909, the patient has gained about 15 degrees of motion but complains of some pain in the elbow and shoulder. From the time of the first operation, Nov. 17, 1908, until April, 1909, she could not move any of the fingers and there was no rotation. The first sensation of life came in the arm with a slight twiching of the fingers, April 2 and 3, 1909. She received daily baking and massage and passive movements from this time on. Gradually, through the summer months,

Fig. 7.—Cutting out with rongeur forceps bit of olecranon tip left in humerus.

she gained entire control of all the muscles of the forearm and fingers, although she had only a few degrees of motion in the elbow. This illustrates a splendid recovery from the Volkmann's paralysis, due, probably, to the efficient baking and massage, but, unfortunately, on account of sensitiveness of the elbow, there was not so much motion as before operation, so that an arthroplasty was thought advisable.

In December, 1909, the patient entered the orthopedic service of the Carney Hospital, and at this time an arthroplasty of the elbow was done according to method described in Case 1.

The circulation of the skin above the original site of the flaps became somewhat diminished and there was a small amount of sloughing. Wound was dressed each day, and about the fifth day daily movements were attempted. In the course of a month, massage and baking were again taken up, and continued until May, 1910. The result is that the patient has full motion of the arm in flexion, and extension to within 15 degrees of straight, and has a perfect functional hand, in spite of the slight limitation in extension, and uses the arm daily, being employed as a stenographer.

CASE 3.—D. W., man, aged 42, referred by Dr. Shea. Case operated before New Hampshire State Surgical Club. March 25, 1911, he received a contused wound of left thumb, which became septic, requiring, one week later, his entrance to hospital as the sepsis had become general. Five incisions were made in the left hand, two in the left wrist, one close to the left elbow joint, and one in the left hip. All had drains put in. A student in the hospital opened a swelling near the right elbow and cut into the joint. At the end of

Fig. 8.—Scooping out ulna and radius with curet.

twenty-one weeks the patient was discharged from the hospital with bony ankylosis of the right elbow and with but a few degrees of motion in the left elbow. Both joints were slightly flexed. The left wrist had a sinus which still drained a little and he had little motion in the fingers, being unable to flex them to a right angle with the palm of the hand. He was

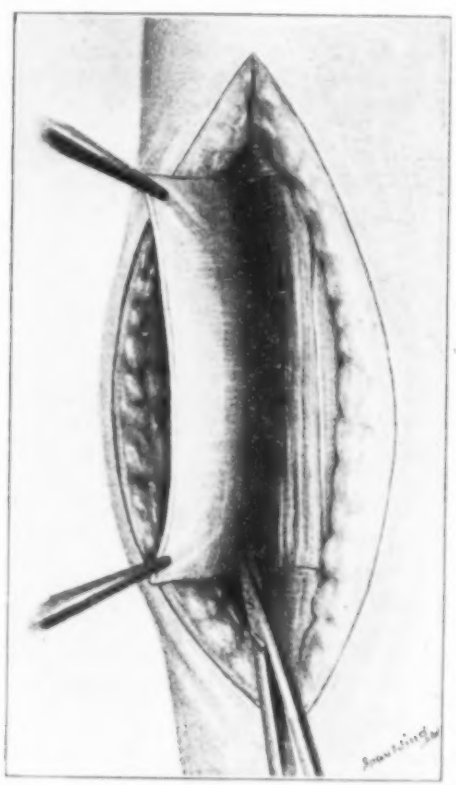

Fig. 9.—Cutting fascia lata from thigh.

unable to feed himself or to touch his head with either hand. He entered St. Joseph's Hospital a few weeks later and was operated on in March, 1912.

Operation was performed by Drs. MacAusland, Shea and Wallace. After the usual preparation and the application of a tourniquet, a U-shaped incision was made, beginning on the lateral aspect about 3 inches above the elbow joint, and passing over the middle of the olecranon to a corresponding position on the opposite side (Fig. 2). The skin and superficial fascia was dissected up to a base line at the end of the incision and then retracted. The skin and fascia were then dissected a little on both sides and on the forearm end of incision. The ulnar nerve was dissected out of its sheath, and gently retracted with gauze (Fig. 3). A straight incision

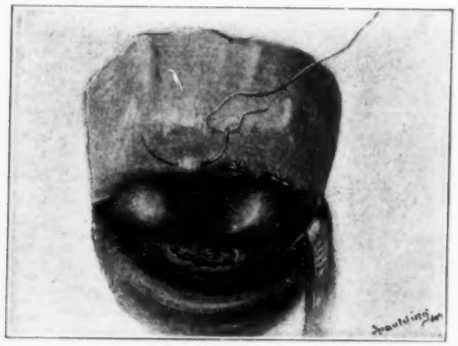

Fig. 10.—Sewing fascia lata to elbow joint anteriorly.

was made extending from one lateral aspect of the condyle to the opposite, crossing midway on the olecranon (Fig. 4). As the capsule and fascia were adherent the incision was made down to the bone over the condyle so as to elevate *en masse* the tissue which would serve as a new capsule. The olecranon was then sawed across and separated (Fig. 5). Owing to the extensive bony ankylosis, even with extreme force the joint could not then be broken open so that it was necessary to saw directly across the line of the old joint. When about three-fourths through the joint, it was possible to fracture the remainder (Fig. 6). There was no doubt of its being a bony ankylosis.

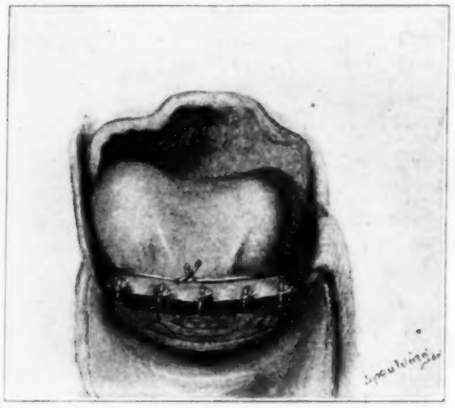

Fig. 11.—Fascia sewed over humerus; tied with kangaroo suture.

The capsule and fascia and ligaments were dissected back so as to allow the lower end of the humerus to protrude out of the wound when its square edges were snipped off with a rongeur forceps and a new trochlear or intercondylar surface formed (Fig. 7). A shoemaker's rasp was used to file this extremity as near like a normal humeral end as possible. A piece was then removed corresponding to the olecranon fossa in the normal humerus (Fig. 8). After this was cleaned, the corresponding surface of the olecranon was curetted so as to take the new humeral head. This modeling of the joint I do largely with a saw and file. To insure good function, the joint surfaces should fit accurately before the fascia is applied, but the joint should not be too loose. Only sufficient bone must be removed to give free motion. If too much of the ends of the bones is removed, a flail joint will result, giving the operation no advantage over an excision. When this mortising was completed, the fascia flap was dissected out of the right leg.

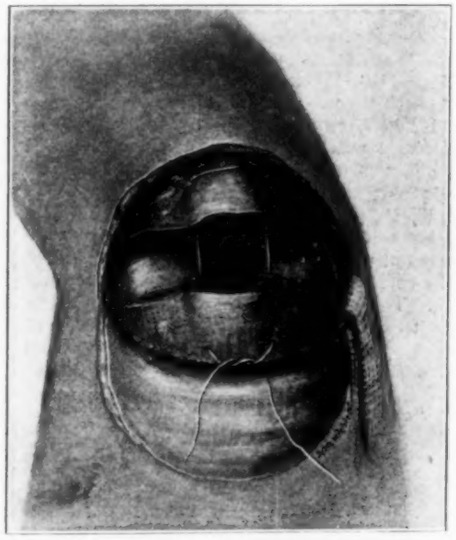

Fig. 12.—Kangaroo suture through ulna and olecranon tip.

A 5- to 6-inch incision was made on the outer side of the right thigh a little below the middle, extending down to the fascia lata. A piece was dissected out (Fig. 9) about 5 by 4 inches and the wound closed. This fascia, free from all fat, was placed about the new humeral condyles by attaching it

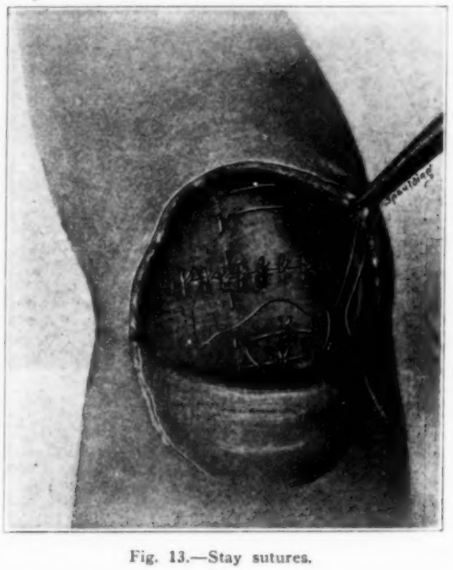

Fig. 13.—Stay sutures.

first to the anterior capsule of joint (Fig. 10) and then tying it about the condyles so that all rough surfaces were covered and a purse-string suture was applied (Fig. 11).

The fascia ligaments and old capsule were then sutured with chromic catgut. The olecranon was sutured with double chromic catgut (Figs. 12 and 13). The skin was closed with silkworm-gut, and a voluminous dressing applied with the arm at a right angle. Arm and forearm were placed on pil-

lows with heavy dressings but no splint. Passive motion was begun on fifth day. Primary union took place of the wounds of the elbow and thigh. Passive motions were continued and increased, but at the end of six weeks it was found that the patient could not use either biceps or triceps muscles and he had lost all power from long disuse. However, after several weeks he educated the muscles by counting and attempting contraction at the same time and finally was able to flex the forearm himself, since when improvement has continued.

Result: He has full motion in flexion, extension and rotation now, and is able to feed himself and to do chores about the house, and put on his own clothes.

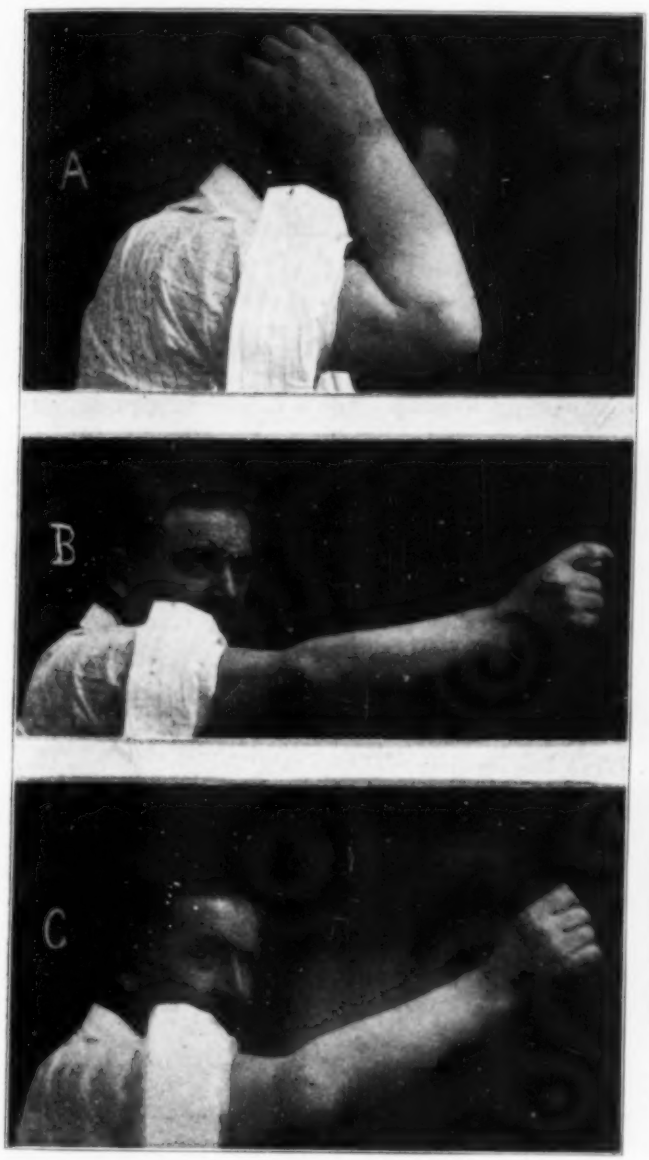

Fig. 14.—Ankylosis of the elbow: *A*, volutary flexion following arthroplasty; *B*, volutary extension following arthroplasty; *C*, voluntary flexion and extension following arthroplasty.

Previous to operation, May, 1912, he was entirely helpless, unable to care for himself in any way. The first duty for every probationer in the hospital was to "feed D."

For the foregoing detailed report, I am indebted to Dr. A. W. Shea, Nashua, N. H.

CASE 4.—E. S., woman, admitted to the Carney Hospital, Aug. 11, 1913, for immobility of the right elbow and right knee, of six years' duration. The patient states that while on a vacation she went in bathing while menstruating. Within twenty-four hours she was taken ill with a fever, accompanied by pain and swelling in all the joints. She was placed under treatment in her home without relief. At the end of eight months, the pain and swelling disappeared from the left shoulder and elbow so that she was able to feed herself. She remained in bed for twelve months. The symptoms continued to subside on the left side until at the end of the third year she was able to get about with a cane. As the fever continued to subside and the pain and swelling disappeared, the patient had pretty good motion in all the joints except the right elbow and right knee, in which pain and stiffness continued at the end of the fourth year and motion was out of the question. This condition remained up to the date of admission.

Aug. 14, 1913, roentgenoscopy revealed ankylosis of elbow joint and of patella to femur. Urine examination revealed specific gravity 1.015, acid; albumin 0, sugar 0.

Aug. 20, 1913, operation on right elbow by Dr. MacAusland, as in Case 3. Light plaster cast applied.

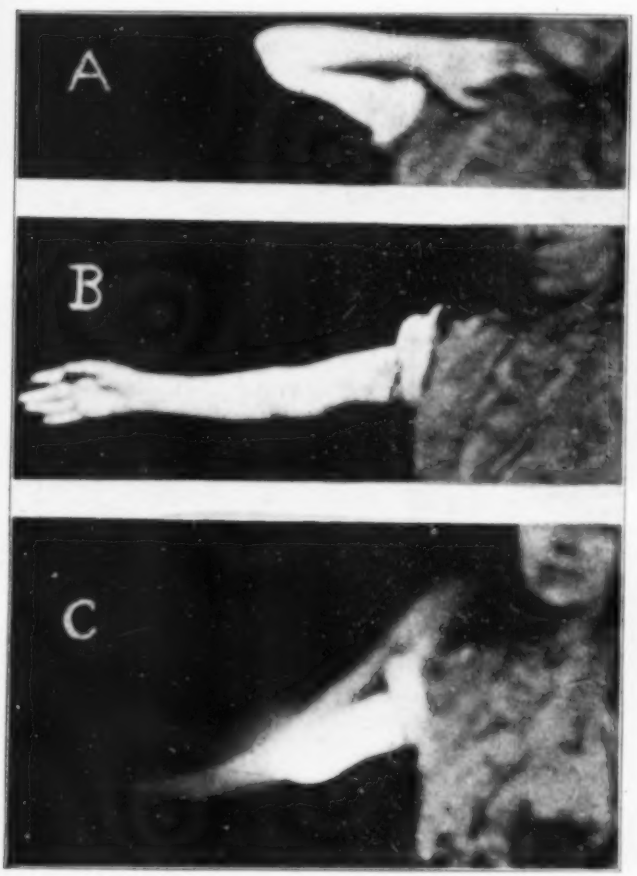

Fig. 15.—Ankylosis of elbow, six months after arthroplasty: *A*, voluntary flexion; *B*, extension and use of arm; *C*, voluntary flexion and extension and power of biceps.

August 22, good recovery; slight pain.

August 27, cast split for dressing.

September 1, wound healed by first intention, except for slight discharge from upper border.

September 4, manipulations daily; motion good.

September 10, arm can be extended completely, and flexed 15 degrees beyond a right angle.

September 15, traction for extending and flexing the arm.

September 20, massage and motion continued.

October 1, active motion possible.

October 15, manipulation of elbow under ethyl chlorid by Dr. MacAusland.

Patient now has perfect flexion and extension and no pain. Excellent functional result.

240 Newbury Street.

ABSTRACT OF DISCUSSION

DR. GWILYM G. DAVIS, Philadelphia: Dr. MacAusland has done these operations by means of posterior incision. Dr. John B. Murphy advocates lateral incisions, and I have done it by means of two lateral incisions. It is perfectly feasible to do it with flaps. With the two lateral incisions we do not get great exposure of the parts; and it is extremely difficult to work. If it can be shown that no trouble occurs, for instance, in obtaining the union of the olecranon, which has been incised and detached, so to speak, the greater accessibility afforded by this operation renders it more desirable than the one by means of lateral flaps.

DR. CHARLES A. PARKER, Chicago: Will Dr. MacAusland state his opinion with regard to rotation in these cases?

DR. W. R. MACAUSLAND, Boston: First, answering Dr. Davis' question with reference to the non-union of the olecranon, I would say that this problem has arisen in one case. In Case 3, I did not think I was getting motion quickly enough so I gave an anesthetic and manipulated the joint. I suddenly felt the olecranon tear and could distinctly feel a separation. I paid no attention to it, however, but put on a voluminous dressing. Patient now has good motion in the elbow. I think a fibrous union resulted which is just as serviceable as a bony union. With reference to rotation, in two of these cases there was bony ankylosis between the ulna and radius, to which I paid no attention. The ankylosis still remains. I question whether in future procedure I should not go down and make a space in that joint, placing a piece of fascia between the surfaces. The patients, however, have perfect use of the arms in this present procedure, and none of them have the deformity of extreme pronation. The arm is supinated one-half, and, so far as I can see, has perfect function, with no motion between the radius and ulna. Had I found the type of extreme pronation existing, I might have considered an attempt to get motion between the radius and ulna or excise the head of the radius.

A NEW TYPE OF ANKLE FRACTURE*

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BOSTON

It seems a bit late to come forward with a new fracture, but in fact the lesion here in question has never been adequately described in print,[1] and has apparently escaped the notice even of those who deal with fractures habitually.[2]

It is in fact one of the common and typical lesions at the ankle, and its best claim to interest is because it is a lesion that every one must have seen, interesting not from its rarity, but from the very fact that it is common, that it is usually overlooked, and that unless reduced it results in serious disability in many instances.

I have been talking about the lesion for years, until some of my house-officers at the City Hospital, wearied by long insistence, have come to refer to it as "Cotton's fracture."

The characteristic point of the fracture under consideration is backward dislocation with the *splitting away of a wedge,* large or small, *from the back surface of the tibia at the joint*—a *wedge* that is *displaced backward* with *backward dislocation of the foot.*

This wedge carries the posterior tibio-astragaloid ligaments; foot and tibial fragment move together, up and backward.

Fracture of the malleoli is associated with this luxation; usually the malleolar fracture is not unlike that of Pott's, though sometimes the internal malleolus and the posterior tibial edge of the joint are included in one piece that is split away in a spiral line.

Fig. 1.—Type lesion, more than average total displacement of the foot backward, and in this case outward as well. This is a case that would have resulted in hopeless disability had reduction not been done.

As a rule, however, the posterior tibial fragment is separate, though associated with fracture of both malleoli.

There are no autopsy specimens, I believe, and no operative results on record, of cases opened up in the early days after the injury.

As a rule both malleoli are broken; hence the confusion with Pott's fracture!

It has long been recognized that certain cases of so-called "Pott's fracture" were complicated with a backward luxation of the foot. What has *not* been recognized is that nearly all of these cases are not really Pott's fractures at all!

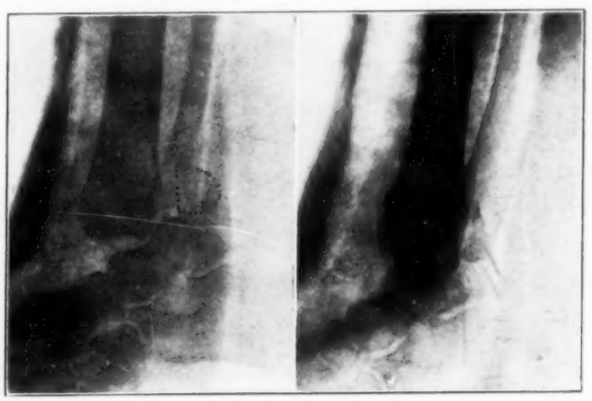

Fig. 2.—Type lesion, with extreme backward displacement. Dotted lines in the left-hand illustration show the wedge broken off the back edge of the tibia, as yet unreduced. The illustration to the right shows reduction of this fragment to an approximately normal site, a reduction incident to the correction (complete in this instance) of the great total displacement of the foot backward. In the second view the fragment seems much smaller. This must be the result of a change in the angle-bearing of this fragment in relation to the roentgenogram.

Of all the cases of ankle fracture I have seen in the last seven years, there has been but *one* of posterior luxation in which the fracture lesion here described has not been present—only one case of real posterior dislocation with Pott's fracture.

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* Read before the Section on Orthopedic Surgery at the Sixty-Fifth Annual Session of the American Medical Association, Atlantic City, N. J., June, 1914.

1. The article by Speed in Surgery, Gynecology and Obstetrics for July, 1914, which does describe such cases had not been printed at the time this paper was read.

2. I put the matter on record at a clinical meeting of the Boston City Hospital, and in my Dislocations and Joint-Fractures, W. B. Saunders & Co., Philadelphia, 1910, 540 et seq. (Figs. 951, 955, 956, 958, 977, 992, 1001, 1018, 1026, 1056, 1059, 1061 and 1067). Stimson records a couple of old cases belonging in this class (Fractures and Dislocations) and Brackett, E. G., of Boston (shown March 2, 1910), and Darrach, W., of New York, have each shown plates of single cases (not published).

In the rest (fifty-three cases of which I have records, more or less full, and others seen in hospital consultations, etc., which I cannot now trace), all have had the complicated lesion that gives the occasion for this paper.

They are no more to be classed as Pott's fractures than are the simple fibular breaks or the "inversion Pott's" cases that are indiscriminately lumped together under "Pott's" in the usual hospital records.

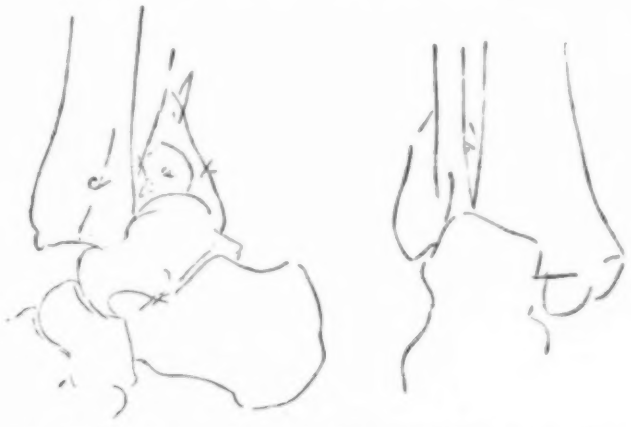

Fig. 3.—Type lesion, extreme displacement back and outward: *a*, posterior tibial fragment; *b*, *b'*, outlines belonging to the broken fibula; *c*, line of the tibial surface from which fragment *a* was broken away.

As I see ankle fractures in the mass, there are the following:

(*a*) Fibular fractures, *above* the joint level, first and commonest; (fractures of the external malleolus alone are rare).
(*b*) Pott's fractures of the type Pott really described.
(*c*) "Inversion Pott's fractures."
(*d*) The type here considered.
(*e*) Fractures just above the joint, and separation of the epiphyses.

I am not sure that our present type—Class *d*—is not more frequently met with than the "inversion Pott's" type.

My attention was first called to the lesion here considered through certain old ankle fractures that came to me for reconstructive operation — cases that presented extreme backward displacement of the foot, with the condition herewith sketched.

I had not previously met such cases and could find no description to fit them.

From that time I looked for fresh cases—and found them—as will be discussed presently. Most of these cases were under my care.

Quite a number of the cases and plates referred to here, however, have been from those services of the City Hospital with which I have no direct connection.

The frequency with which this lesion has been overlooked and left unreduced by skilled surgeons (despite good roentgenograms) seems to me an additional reason for erecting a separate class for it.

Not only is this lesion not a simple variant of Pott's fracture, but any attempt to treat it like a Pott's fracture ends (in a large percentage of cases) in serious disaster.

A Pott's fracture or an "inversion Pott's" is bad enough, with the two sides of the articular mortise gone; but when we have the astragalus driven clear back of the mortise and deprived not only of *lateral* support, but of any *vertical* bearing as well, the condition is apt to be hopeless unless properly handled.

If the foot and leg rest on the heel, of course the tendency is toward spontaneous reduction; but this occurs only in a portion of the cases: in many, the displacement resists even a considerable force directed toward its reduction.

Such a case, unrelieved, must end in a new joint between the tibia and the forward slant or neck of the astragalus, with limited dorsal flexion, and without any precise support at the sides.

Having seen such results, I can not speak well of them.

Back in 1904-7, among the cases sent to me for reconstruction of damaged ankles, were three absolutely crippled ankles with backward displacement of the foot that distinctly belonged to this type.

They were repaired fairly well by combining a bimalleolar osteotomy (with deliberate forcible rupture of most of the ligament) with the preparation of a new concave joint surface on the tibia with chisel and curet (approximately at the normal site) —a concavity into which the displaced astragalus was shifted forward approximately into its former position. The cases all recovered improved if not normal function.

After these cases had been dealt with, I was on the alert for fresh cases, and found them, and am still finding them.[3]

In 1908, A. H., a student of the Massachusetts Institute of Technology, was brought into my office with an ankle smashed and luxated backward and outward. Obviously, this was the case I had been looking for. The fracture of the fibula and the tearing away of the internal malleolus were obvious; the foot was also luxated backward (and in this case outward as well). Reduction under light anesthesia was easy. Roentgen-ray plates taken shortly after showed a fragment broken off the posterior articular face of the tibia.

This patient got an almost perfect ankle.[4] The Roentgen ray showed a wedge from the tibia, then already reduced, that had been displaced backward

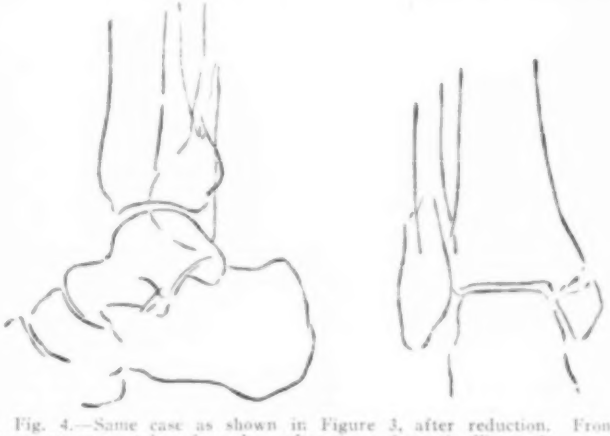

Fig. 4.—Same case as shown in Figure 3, after reduction. From roentgenograms taken four days after those shown in Figure 3.

with the luxated foot; both malleoli were fractured.

The other fresh cases were almost identical with this one.

The worst of the displacement is often dealt with before the surgeon sees the case. It is, moreover, unjustifiable for the surgeon to wait to get pictures before reducing so painful a luxation as is the one under consideration.

3. Four have come to hand since this text was written.
4. I kept track of him for a few months only, through Dr. Walter Baer of Baltimore. The Roentgen-ray plates the patient took to Baltimore, and I have been unable to recover them.

The illustrations and the appended legends really tell the whole story.

We are dealing with an injury in which the dislocation backward is the important lesion.

This displacement once corrected, we have (substantially) a bimalleolar fracture.

Unless we recognize it and reduce it, we have to reckon with the meanest and most serious lesion that occurs at the ankle.[5]

MECHANISM

A twist is usually given as the cause of the injury.

One patient misstepped the edge of a mat in wrestling; one did the same thing in gymnasium "tumbling;" one twisted her foot outward as she stooped from her chair to pick up a rolling spool, a rug slipping under her foot; another, in walking, twisted her foot out on the edge of a rug that slid, etc.

Fig. 5.—Old case. End-result of poor treatment shown in the two upper tracings. Below is shown the lateral view of the imperfect, but sufficient, operative reduction. The clinical result in this case (as in several others of the series) was markedly better, even than the plates suggest.

Apparently an outward and backward twist of the foot is usual.

Apparently the break is often sustained while weight is borne on the ball of the foot, not on the flat foot surface.

A disproportionate number of these cases have been encountered in private practice, which means only that the lesion is not, as a rule, the result of industrial accidents.

TREATMENT

Reduction is simple if the lesion is understood.

All that is called for is forward traction, with the muscles relaxed in moderate plantar flexion; reduce so, and then lock the reduction in maximum dorsal flexion. Hold in plaster.

5. Nothing above or below the ankle joint proper is more troublesome, unless we except astragalus and calcis lesions.

Results are bad if the lesion is not understood, unless spontaneous reduction has occurred.

If reduction, spontaneous or operative, has been accomplished, repair is prompt, and the results are excellent—in no way worse than in Pott's fracture.

The after-treatment is that of Pott's fracture, save that early mobilization is absolutely essential, and no weight should be borne on the foot for at least seven or eight weeks.

The important thing is to know, and to be on the lookout for, this common and neglected lesion. Given an understanding of what we are dealing with, the rest of the story is simple. But it is important to know that the lesion does occur, to be on the lookout for it, to recognize it, and to deal with it intelligently.

520 Commonwealth Avenue.

ABSTRACT OF DISCUSSION

DR. J. D. GRIFFITH, Kansas City, Mo.: The most interesting feature in Dr. Cotton's cases is the distinct line between this form of fracture and what he outlines as the genuine Pott's fracture. I have found in my little work at home that there is a fracture which we have ordinarily termed Pott's fracture that we cannot get to stay in position. As I did not know of Dr. Cotton's extreme dorsal flexion, I could not use that; but I have used this method several times in reducing these fractures and maintaining them, whereas in Pott's fracture, rotation inward, almost varus, of the plantar surface of the foot will generally give a good clinical result. These cases require straight-out extension first. Otherwise, one cannot do anything with them; and I cannot yet understand the reason why. I have not been able to determine it. If Dr. Cotton brought that reason out in his paper, I did not get it. Therefore, I ask him to explain it. These are the cases in which we get shortening after a number of months. The patient comes in and says, "I was fixed up, but I cannot use the leg"; and by measurements and roentgenogram one finds that the tibia is rubbing on the back part of the astragalus, instead of in front. These cases are hard to get at; after six or eight weeks I have tried two or three times before I could get any good result, and then, not a perfect one.

DR. GWILYM G. DAVIS, Philadelphia: The trouble that I have found in fractures around the ankle is, first of all, in reposition. Dr. Cotton did not give the details regarding his after-treatment; but in attempting reduction, one method of rendering it easier is to place the leg in the Pott's position. The difficulty in some instances seems to be due to the tension of the Achilles tendon. By placing the leg on its outer side and flexing markedly at the knee, you relax the tendon. Some ankle fractures, in which replacement is difficult, can be replaced when the Achilles tendon is so relaxed. In still more difficult cases, it is a justifiable procedure to do a tenotomy. That seems to relax markedly the structures around the ankle and enables us to make a reposition. Otherwise, it is extremely difficult, or almost impossible. What are Dr. Cotton's views concerning the advisability of doing this in certain cases.

DR. H. W. ORR, Lincoln, Neb.: Dr. Cotton has rendered the section a real service by calling attention to the necessity for a more careful classification of these cases. To me, however, one of the most important things he said was in emphasizing the necessity of reposition of the fragments as nearly complete as possible. I have had occasion, as we all have, to attempt to patch up bad results of this sort; and it is usually because the surgeon or the general practitioner has neglected roentgenoscopy in confirming the replacing of the fragments. I have sometimes used to advantage the position that Dr. Davis recommends and have found that when careful manipulation failed to replace the fragments, they could be molded into place by the tips of the fingers.

DR. JOHN PRENTISS LORD, Omaha: Dr. Cotton has the secret of greater success in the future of these cases.

We should begin to look for them and we will surely find that these fractures of the ankle are often atypical. The common fault has been to call everything Pott's fracture, with the result that the treatment given to many of them is wholly inadequate in view of these more recent facts. A method for the replacement of small fragments that I think is not very commonly used has been of assistance to me in some of the old cases. In these conditions the small fragments have infiltration about them, and partial union which resist ordinary methods. An open operation may sometimes be avoided by the use of an awl or drill, with which to enter the fracture area and push the fragments about, just as wanted. Then, by properly checking with the Roentgen ray, we can ascertain when we have the fragments in the best position.

DR. W. RUSSELL MACAUSLAND, Boston: Will Dr. Cotton explain the surgical details of his treatment in a case of six months' duration?

DR. F. E. PECKHAM, Providence, R. I.: It would be well if more attention were paid to the Roentgen ray in these cases. The general practitioner is apt to fix the fracture in the best way he can clinically; and if it looks pretty well, he thinks that it is all right. That, I think, is the reason for the bad after-results. To my mind, such a paper as this would tend to increase the use of the Roentgen ray, and thus allow us to obtain accurate knowledge. I had a similar fracture some years ago, in which both malleoli were broken, leaving a spicule of bone sticking into the astragalus. The result was that at every step the patient took, she felt as if a tack were sticking into the bone. Although a roentgenogram had been taken and many physicians had examined it, the woman was still on crutches at the end of two years. The removal of the spicule stopped the pain, but reconstruction work was necessary—an osteotomy of both malleoli, to place the ankle in good position. She now has a useful foot with some limitation of motion. Dr. Cotton's ideas with regard to the after-treatment and his suggestions have changed my own ideas somewhat. Will he give a brief statement of his views as to the after-treatment?

DR. D. B. PHEMISTER, Chicago: I have seen about half a dozen of these old and neglected cases from one to three years after the fracture occurred. All were in bad shape. After from nine months to a year, bony union occurs. This posteriorly displaced fragment is then fixed in its old position and an imperfect articular surface is produced. In one case, two years old, I cut down and reduced the astragalus, placing it in the anterior articular surface, left the posterior prominence, and got a bad result with very little improvement. In the second case I did a remodeling, and there I got a bad result—or, rather, not a good ankle. It has occurred to me that perhaps the anterior surface of the tibia could be chiseled away, this posterior, newly-formed articular surface left, and then a supramalleolar osteotomy done. The foot could then be thrown forward, so that the line of force would fall on top of the astragalus, and a good result obtained in that way, as Dr. Cotton has obtained it in Pott's fracture with outward displacement. Has Dr. Cotton treated any cases in that way?

DR. F. J. COTTON, Boston: Answering Dr. Griffith's question about the deformity, the trouble is that no ligaments and no tibial surface are left that are useful. Even after reduction under ether, unless the straight-out extension of the foot is made first, the astragalus may be driven up against the articular surfaces, and the whole thing may go back with astonishing force. That is the reason for the recurrence of the deformity. I was afraid Dr. Davis would get the point confused. These cases are not Pott's fractures. They are a little like them, but are distinct from them in causation and in the way in which they should be handled. About the question of position, I would say that I use the one Dr. Davis spoke of, and usually flex the knee somewhat in carrying out ankle reduction. With regard to cutting the tendon of Achilles, I have done that in tarsal fractures, but I dislike to do it, because a certain amount of atrophy is caused, and it takes a while for the function to come back. In traumatic cases one has trouble in getting function anyway. Another reason why I dislike to do this cutting is that in putting the cases up in dorsal flexion, it is the Achilles tendon that is depended on. Some cases, however, cannot be treated without open operation, which is undesirable. If one can avoid it, I should say that it is better to do so. With regard to Dr. Lord's statements, I have used a drill or awl and left it in to pin the fragments with, but I have never used such an instrument to drive them about. That point is interesting. Dr. MacAusland asked a question about the treatment in old fractures. I have done three things in my cases. In most of them I made an incision outside and inside. Then, after a section of both malleoli above the joint-level, I loosened up the whole joint, and then cut out, if necessary, a fresh joint-surface on the front part of the tibia to slip the astragalus into. This gives a little shortening; then the foot can be brought down and forward and things placed where they are wanted. That is what I have done in most cases of ankle-reconstruction. In one case in which the trouble was not so much loss of dorsal flexion as an enormous callus, I dug out most of the posterior fragment and set the tendons in a new sheath. In another case I cut away the front edge, but did not do the supramalleolar osteotomy, and got a pretty good foot. As to Dr. Peckham's remark, there is no question that the Roentgen ray should be used more carefully; but if you once get the pathology in your mind, there is no difficulty in making the diagnosis without it. In a great many cases you get along better if you do reduction promptly because there is a good deal of reaction. I want to emphasize that these cases are not Pott's fractures. They ought to be considered as a different class. If they are so handled the result is all right; a good many are not treated properly because this has not been recognized.

THE AUTONOMIC RECIPROCAL ACTIVITIES OF BRAIN AND VISCERA*

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NEW YORK

A decade has now passed since Langley and the English School contributed to our knowledge of nervous anatomy and physiology a comprehensive plan of the structure and workings of that part of the nervous system which supplies the smooth muscle fibers of the body, the cardiac muscle and the glandular tissues, and to which they gave the broad term "autonomic system," so called from the fact that it acts independently of the cerebrospinal system. Yet there still seems to be confusion not only in the nomenclature, but also in the interpretation of the many experiments that have been made by various investigators in this field of research. We have, for example, the term "vegetative" used by the Viennese School instead of "autonomic" for the entire system of ganglia and nerves and end-organs — *vegetative*, because through its means the normal continuity of life and of the vital functions is preserved. The representatives of this school are Eppinger, H. H. Meyer, Gottlieb and Hess. Since the popular term "sympathetic" is misapplied to the system and its different parts indiscriminately, it would be well perhaps to sketch rapidly the anatomic and physiologic characteristics of the autonomic system, adopting the classification of Langley.

The entire autonomic system is divided into various parts, depending on the position of the cells of origin of the nerve fibers of the system in the cerebrospinal axis. These cells of origin, termed by Edinger, Jacob-

* Read before the New York Neurological Society, April, 1914.

sohn and others nuclei sympathici, are found in certain definite areas of the brain and cord. Corresponding with these areas, then, we have the following divisions of the system:

1. Midbrain autonomic division, consisting of the cells with their axons which emerge from beneath the superior corpora quadrigemina supplying the iris and ciliary muscle.

2. Bulbar autonomic, of which the fibers emerge from beneath the floor of the fourth ventricle to pass out with the seventh nerve, nervus intermedius, ninth and tenth nerves, to supply the vessels and glands of the mouth, pharynx, nose, esophagus, stomach, small intestine, part of large intestine, trachea and lungs.

3. Thoracic autonomic, or sympathetic system proper, arising from the sympathetic cells of the lateral portion of the anterior horns of the spinal cord from the first thoracic to the fourth lumbar segments, and passing out by the white rami to the gangliated cord and its connections to supply the skin, arteries, muscles, glands, abdominal viscera and internal generative organs.

4. Sacral autonomic, leaving the cord from the first to the third sacral segments as the pelvic nerve, to the ganglia of the anus, rectum, descending colon, bladder, urethra and external genitals.

The fibers, as they leave their cells of origin in the cord or brain, continue their course until each one arrives at a ganglion. In this ganglion, the terminal arborizations of each fiber, or of its branches, are connected with one cell for each individual fiber, and no more than one. These original fibers from the central system to a ganglion are known as "preganglionic" fibers. The axons arising from the ganglionic cells wend their way to the peripheral end-organs of various tissues, and never, under any circumstances, pass to other cells of the same system. Therefore, there are no commissural fibers in the autonomic system. These secondary fibers from ganglion cell to the periphery are called "postganglionic" fibers. The mechanism of ganglion cell and arborization of preganglionic fiber, together with the hypothetic intervening membrane, is known as the ganglionic synapse.

There are two great gangliated cords, situated on either side of the vertebral column, consisting of a series of ganglia connected by short intervening cords. These two gangliated cords extend from the base of the skull to the coccyx. Superiorly they connect with plexuses that enter the cranial cavity, while inferiorly they converge on the sacrum and terminate in a connecting loop on the coccyx. The ganglia of the gangliated cord are known as vertebral ganglia, while those of the great plexuses more peripherally situated are called prevertebral ganglia.

The short cords uniting the spinal nerves with the ganglia and fibers of the autonomic system are called the rami communicantes. The white ramus communicans is composed largely of fine medullated fibers passing from the spinal nerves to the gangliated cord, and not from all the spinal nerves, but only from those from the first thoracic to the fourth lumbar segments of the cord. The gray ramus, on the other hand, is composed for the most part of pale, non-medullated fibers, passing from the gangliated cord to all the spinal nerves, at every level. At the next anatomic fact we have a curious resemblance between the two extreme divisions of the autonomic system. It is that the sacral visceral nerves correspond to white rami communicantes, for they pass directly to the visceral ganglia of the prevertebral plexuses, without connecting with the gangliated cord. The similar condition exists with the craniobulbar autonomic division — that of the vagus — for here also the visceral branches of the vagus, the glossopharyngeal, the facial and the short branches of the oculomotor to the ciliary ganglion pass to the visceral ganglia directly, as white rami communicantes.

There are other points of resemblance between these extremes to be seen directly. Thus the craniobulbar and sacral divisions are local in their supply, whereas the thoracic autonomic, or sympathetic proper, is almost universal. That is, each of the first two has its area of control distinct from the other, anatomically, while the sympathetic sends fibers not only to its own territory proper, but in addition, it also sends fibers to the same structures as the other two, so that the tissues supplied by the craniobulbar and sacral autonomic have a double innervation, while those supplied by the sympathetic have only the one. Where there is this double supply, the two kinds of nerves are not necessarily opposed; but if their effect is different, then all the central strands of one system have one effect, and those of the other system have one and the opposite effect.

With this short explanation of the chief anatomic and physiologic characteristics of the autonomic system, let us proceed to a consideration of the reciprocal effects of the activities of the parts of the system presiding over the viscera, and their relation to visceral activity. It may not be amiss to consider first the curious conditions that obtain in the lowest form of vertebrate life which, in the course of evolution, in a great increasing series of complexities, led to the seemingly hopeless intricacies in the economy of the highest type, man. In the amphioxus as the prototype, we find the following interesting and important features:

The development of the amphioxus from the fertilization of the egg to the end of the embryonic stage, and thence through the growth of the larva, can be studied microscopically with comparatively little difficulty. This has been done in late years especially by Hatschek[1] of the university of Prague, and in earlier years by Kowalevsky of St. Petersburg.[2] Of interest to us in this development of *Amphioxus lanceolatus* is simply the origin and evolution of the primitive nervous system, with its earliest connections to other parts of the living structure. The growth of the edges of the neural furrow from the turning in of the epiblast begins at the *posterior* end, at the position of the gastrula mouth, and advances to the anterior end. The remains of the gastrula mouth continue as an opening between the archenteron and the neural canal — a condition typical of all vertebrates — termed the neuro-enteric canal. At a later stage of development it is at this point that the anus perforates, and at the same time the communication between the neural canal and the archenteron is interrupted. These two canals have therefore, as their point of connection, the morphologic posterior end. This primitive nervous structure and the end of the alimentary canal are thus closely related in the evolution of the animal. One other point in interest for us is the double service rendered by the mouth to the animal when fully developed. All observers agree that the animals emit their sexual products through the oral aperture, the male the sperm, the female the eggs, so that the nervous control of the ingestion of food and of the emission of sexual products must be closely related.

1. Hatschek, B.: Amphioxus and its Development, translated by Tuckey, 1893.

2. Kowalevsky, A.: Entwicklungsgeschichte des Amphioxus lanceolatus, Kiev, 1870.

When we arrive at an extremely high vertebrate type, the mammal, we find curious resemblances in the results of physiologic and pathologic experimentation to these observed characteristics of amphioxus. At the risk of much repetition, I should like to refer to my experiments on cats in this connection. In one series of experiments, I diminished the influence of the craniobulbar autonomic,[3] that is, the vagus, on the viscera, by tying off the vagus, and at times both vagi, below the esophageal plexus in the thorax. This limited the effect, if any, to the abdominal viscera entirely. After some months, the animals, which seemed none the worse for this deprivation, were killed and among the findings were the following: The stomach was enlarged and thickened, and the peptic glands were largely increased in number. Of greater interest to the present subject, however, was the unexpected discovery of the great increase both in length and caliber of the colon and rectum. The normal length of the large intestine in cats, from the ileocecal junction to the anus, is on an average 200 mm. On the operated animals the length of the intestine was uniformly increased to 300 and 325 mm., and its circumference, which normally is about 35 mm., was increased to 65 mm. Therefore it is a fair inference that any inhibition exerted by the brain on the vagus nerve impulses to diminish their intensity produces profound effects in the vegetative life of the cells of the alimentary canal, causing a hyperplasia. The close connection which we saw existed between the primitive neural canal of the amphioxus and the posterior end of the archenteron has apparently its counterpart in the highly developed organic structure of the higher class, mammalia. And we shall see later on that in the genus homo, cerebral activities that depress the vagus nerve cause physiologic effects on the intestine that in the light of what has just been presented are readily understandable.

From the short description of the anatomic characteristics of the autonomic system which has just been given, we see that the viscera generally have a double nervous supply, the one from the sympathetic via the vertebral and prevertebral ganglia, and the other from either one or the other of the autonomic divisions. These two sets of nerve fibers convey a continuous stream of current to the tissues; but from the probability that their end-organs in the tissues are different from one another, class for class, their effects on the viscus are of a balancing character. As a result, the activity of the organ is commensurate with the work that in a given case is required of it, the repair and growth of its cellular elements controlled, the blood-supply properly limited; and all these various activities are constantly at work, independent of our will, and indeed, largely of our consciousness. But such a compensating balancing mechanism is dependent on many factors other than these, and yet on factors that are influenced *indirectly* by the will and consciousness, so that if one set of nerve fibers is depressed, the other overacts its part, and the converse. But it would seem that if one set is entirely destroyed, the other, having no physiologic antagonist, ceases its influence. In the experiments cited, the vagus nerve was never completely severed, but simply *partially* destroyed by a moderately tight ligature. In the cases of complete vagus section as carried out by Langley, Cannon, Pawlow and Schiff, these hyperplasias were not produced.

3. Timme, W.: Nervous System in Hyperplasia, Jour. Nerv. and Ment. Dis., May, 1913.

Now, we can produce conditions in the various parts of this autonomic system comparable to such a pressure neuritis in its temporary effects, by means of drugs, psychic disturbances and various physiologic stimuli. Let us take up the effects of drugs and psychic disturbances solely. The Viennese School, Eppinger, Hess, H. H. Meyer, Gottlieb and others, have demonstrated that certain groups of poisons have, with some limitations, selective effects on the end-organs, or synapses, or central cells of either system. And the group of these agents that stimulates the one system depresses the other. So we have the so-called cholin group, and pilocarpin and physostigmin, all acting as *stimulants* to the autonomic nerve ends, while atropin with its family *depresses* the same ends. The central stimulants of the two systems are picrotoxin for the autonomic, and cocain, caffein, atropin and thermin for the sympathetic, while the corresponding depressants are botulismus toxin and other decomposition products for the autonomic, and morphin, chloral and the antipyretics as sympathetic central depressants. Epinephrin is a stimulant of the sympathetic ends and centrum both and a depressant to the autonomic.

With these means at our disposal, we are in a position to determine generally the interrelation of the nervous system and the organs it supplies. For example, we administer the autonomic stimulant, pilocarpin, to a patient, and if his autonomic system is functionating normally, we soon observe the tissues supplied by its nerves overact, and he shows myosis, paralysis of accommodation, peristaltic paralysis, bladder contractions, asthma due to bronchial spasm, bradycardia, pallor of the skin, and an increase of glandular secretion throughout the body, notably of sweat. These manifestations are accompanied by cerebral manifestations such as psychomotor inhibition, fear and depression. Conversely, in patients that present depressions, with diminished psychomotor activity, we find an equivalent to an autonomic stimulating effect, in that they have paralysis of peristalsis, slow pulse, cold and clammy skin and subnormal temperatures.

If atropin is given to this person in full doses, the picture changes entirely, for atropin stimulates the sympathetic and depresses the autonomic. Here we see a relaxation of the spasmodic action of the smooth muscle fibers, so that peristaltic action is increased, the bronchial spasm relieved, the skin becomes dry and warm, the heart regains and even exceeds its normal rate, the pupils become large and mobile, and the whole picture is one of intense activity. Mentally, the person is alert, with great psychomotor activity, flushed face, and with his initiative restored and increased. Conversely, the emotional excitement, the intense activity, the euphoria, exhibited by certain psychic disturbances is accompanied by the visceral manifestations of sympathetic stimulation: namely, increased heart action with a feeling of bodily warmth, enlarged pupils, excessive appetite, and increased peristalsis.

These two examples may be taken as indicative of the complementary activities of the two systems. How it comes that cerebral activity is transferred to the cells of the sympathetic nuclei in the cord, or vice versa, is unknown; for while Bechterew and others have gone so far as to state that there are certain areas of the cortex which control the autonomic activities, especially those of erection, of the production of sweat and of intestinal peristalsis, yet proof is wanting. Müller is of the opinion that even the will is powerless to influence the functionating of the autonomic system.

In opposition, Lewandowsky cites the fact of the voluntary emission of urine. Yet, as a matter of fact, how often do we see patients who, though their nervous and urinary system are apparently intact, cannot void urine even if they will?

There seems to be some intermediary between the will and the autonomic function. The following case is illustrative: Some time ago there came a man to the Charité in Berlin, who could cause the pilomotor muscles of his arms to raise the hair of the arms, and produce goose flesh at will. He could voluntarily cause his pupils to dilate and contract, and he had some control over the rapidity of his heart. He was presented as a case of "voluntary autonomic control"—a manifest contradiction in terms. When closely questioned, he admitted that the effects were produced not immediately by his will, but always by the intermediation of some association called into being by him. Thus, when dilating his pupils, he always imagined himself looking into space, under which conditions the pupil does dilate. For the goose-flesh effect, he would picture to himself his arm plunged into ice water, and the result ensued.

We all know that various associations produce autonomic effects without our will, and it is reasonable to suppose that if we can recall these associations through our will, the same autonomic effects will be produced. Joy causes a rapid heart action; shame is accompanied by blushing; fear sends the blood from the face and lips, and dries the mouth; psychic irritation may cause vomiting, or asthma, or diarrhea, and sexual excitement is followed by erection. Any of these effects can be produced by calling up the associations which accompanied their presence at some previous time, so that only indirectly can the will control the autonomic mechanism—a far different matter from the voluntary absolutism over the cerebrospinal. This is of far-reaching importance, for as our moods depend largely on the varying adjustments of ourself to our environment, on the one hand; and as these moods are made up of such components as were just mentioned, joy, fear, anger, shame, on the other, we see that the harmony of the activities of the internal organs depends partly on our proper adjustment to our surroundings. Our will, as such, can help us not at all to overcome our difficulties in the internal economy, but only so far as it can make our voluntary activities harmonize with their environment. Reciprocally, confusion in the internal economy, by a disturbance of the autonomic system, unless thoroughly compensated by the opposing sympathetic, produces changes of blood-pressure, differences in the ratio of the quantities of the various hormones in the blood, and changes in secretion; all of which influence the activity of the cortex, causing finally the different moods which make our adjustment to our surroundings so difficult. And now we find ourselves in an extremely vicious circle. The extrication therefrom is the problem of modern medicine.

But there is one peculiar condition to which I should like to call attention. It is that when disease, or perverted function of either the spinal tracts or centers or in the brain itself causes a cessation or diminution of the reciprocal activities between the brain and the particular viscus in question, then the activity seems to be transferred to some other viscus and a substituted result follows. Thus I have under my care a patient suffering with spinal lues. He is impotent. Yet, when he is in psychosexual excitement, he invariably vomits, and the tension under which he was is immediately relieved thereby. A second patient, whose sexual development is far backward and who does not comprehend the nature of reproduction, is nauseated whenever she is in the company of boys of her age, and frequently vomits under a little added excitement. As she herself explains it, the vomiting relieves her mind. We need recall only the condition in the amphioxus previously described for an analog.

Many attempts have been made to trace anatomically the path of influences from the cortex and other cerebral areas to the bulbar and spinal sympathetic nuclei, and on the other hand the track of the painful and other sensations from the viscera to the cortex. But the sum of our knowledge at present is merely that there exist certain areas in the brain whose stimulation produces certain activities in the viscera. For example, there is a point in the hypothalamic region which, when irritated, produces dilatation of the pupil (Kreidl). The floor of the third ventricle contains an area which partially controls the sugar tolerance. Bladder contractions may be called forth by stimulating a part of the hypothalamus; but these results are quite isolated and want further proof. As for tracts of conduction for these impulses, we know simply that the cervical sympathetic and the superior cervical ganglion are the carriers of the current from the cerebrum and midbrain to the ciliary muscle influencing the tone of the pupil. And that is all. Müller believes that there is the same possibility of changes occurring in the excitability of the medulla and cord as occur with the changes in mood in the psychic centers, and thus we can understand in a measure the production of effects in the viscera through a disturbance of their spinal centers. The other question, the manner of conduction of painful impulses from the viscera to the cortex, is explained by many—Sherrington, Müller, Head and others—as due to the process of "irradiation" from the termination of the afferent autonomic fiber in the spinal ganglion to the spinal afferent nerve in juxtaposition to it, and thence to the cortex. A new theory of the function of the nodes of Ranvier, in which these nodes serve as channels of communication between highly charged fibers and those less markedly so, will perhaps explain the difficulty underlying the meaning of the term "irradiation."[4] The carrying of the current by spinal nerves causes presumably the projection of the pain area to the peripheral zone supplied by these nerves—"Head zones."

We have now seen in the lowest vertebrate type, the amphioxus, in the mammalian cat, and in the human being, based on embryologic development directly observed, on physiologic and pathologic experimentation, on clinically observed facts and on pharmacologic experience that there is a close relationship between the activity of the brain and that of the viscera, and that in spite of the autonomicity of the one and the primacy of the other, each is complementary to the other in a broad sense, and depends on it for its own normally functionating existence.

4. Timme, W.: Theoretical Considerations of Node of Ranvier, Jour. Nerv. and Ment. Dis., February, 1913.

Truth or Happiness.—Henri Poincaré starts one of his books with the remark that the chief aim of man is to search for truth. Nine people out ten will tell you that the chief end is to search for happiness. These are the two points of view and they split up the whole world into two kinds of people.—*Scientific American.*

RELATION BETWEEN CHLORID RETENTION, EDEMA AND "ACIDOSIS"*

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It has been noted by different authors that in edemas of various types, as in those associated with heart disease, certain types of nephritis, etc., there is evidence of chlorid retention in the body. From this it has been quite generally concluded that in these conditions the kidneys are unable to eliminate chlorid (or, as ordinarily stated, are unable to eliminate sodium chlorid) and that its retention in the body is responsible for the edema. On such reasoning has been based the widely approved therapy of sodium chlorid restriction, and since a lessening of edema has at times been observed in patients following such restriction, the argument as a whole has been regarded as entirely sound.

Against it have stood, on the one hand, the failure of good observers to see any clinical improvement following careful efforts at applying the principles of sodium chlorid restriction, and on the other, the experimental facts developed in my studies of water absorption by protoplasm. According to these studies the hydrophilic (protein) colloids of the body and their state are chiefly responsible for the amount of water absorbed and held by any cell, tissue or organ under physiologic and pathologic circumstances. There exists a complete analogy between the absorption of water by simple protein colloids and by living cells. The presence of any salt, including sodium chlorid, reduces the amount of water absorbed by any (protein) colloid, and similarly the amount held by tissues either under normal circumstances or in states of abnormally great hydration (edema). These considerations have compelled the conclusion that sodium chlorid restriction as a scheme of therapy is not only wrong in principle, but also harmful in practice.

It is the purpose of these paragraphs to indicate why sodium chlorid retention and edema go hand in hand. *Sodium chlorid retention is not due to an inability of the kidneys to eliminate it, but to a change in the proteins (and other colloids) of the body as a whole. Sodium chlorid retention does not lead to edema, but the changes which lead to edema and to sodium chlorid retention are the same, consisting, in the main, of an abnormal production and accumulation of acid in the body.*

Proofs for this may be brought from both a clinical and an experimental side. So far as the clinical aspects are concerned, it is sufficient to emphasize that sodium chlorid retention is a constant accompaniment of all pathologic conditions in which there is evidence of an abnormal production and accumulation of acid in the body, as betrayed through a persistently high hydrogen ion or titration acidity of the urine, through an increased hydrogen ion acidity of the blood, an increased hydrogen ion acidity of the saliva or other secretions from the body, through a high relative or absolute ammonia excretion in the urine, a low carbon dioxid content of the blood or alveolar air, etc. Because such acid intoxication is exceedingly common in many different clinical states it is readily apparent why sodium chlorid retention has long been observed in pneumonia, in many of the infectious diseases, in the pernicious vomiting and intoxication of pregnancy (eclampsia), in the cyclic vomiting of children, in diabetes, in carbohydrate starvation, in the severer types of the circulatory disturbances, in the severer anemias, in poisonings with arsenic, lead, phosphorus, chloroform, ether and alcohol, and in the generalized parenchymatous nephritides when accompanied by a generalized edema. *The water retention likely to be observed in all these states is not secondary to the sodium chlorid retention, but both are due to the existent acid intoxication. The presence of acid in abnormal amount in the body not only increases the hydration capacity of the (protein) body colloids, but also increases at the same time their capacity for holding chlorid.*

Experimental proof of this may be easily brought. When protein (carefully washed fibrin or gelatin) is thrown into a salt solution it not only absorbs water from the salt solution, but salt as well. On the addition of acid, the amount of water absorbed is increased (the protein becomes "edematous"), but the absorption of salt is also increased. The presence of acid, in other words, leads not only to greater swelling, but also to sodium chlorid retention. Experiments were made by placing weighed amounts of fibrin or gelatin in definite volumes of neutral or acidified sodium chlorid solutions of definite strength kept in carefully stoppered flasks. After varying periods of time the solutions about the swollen protein were filtered off and the chlorid in them determined by titration with silver nitrate according to Volhard's method. The following experiments suffice to illustrate the values obtained:

Experiment A.—A dry gelatin plate weighing 0.813 gm. is placed in each of the following solutions:

1. 75 c.c. 1/6 molar NaCl + 25 c.c. H_2O
2. 75 c.c. 1/6 molar NaCl + 25 c.c. N/10 HNO_3

Titration (of an aliquot portion) of the surrounding fluids nineteen hours later shows the former to contain 0.00303 gm. chlorin (=0.005 gm. sodium chlorid) more than the latter. In other words, the gelatin in the acid solution has absorbed this amount of chlorin (or sodium chlorid) more than the gelatin in the neutral medium. Twenty-three hours later the difference is still more striking. At this time the surrounding liquid in the first mixture contains 0.00606 gm. chlorin (=0.01 gm. sodium chlorid) more than the second; or, conversely expressed, this much more chlorin (or sodium chlorid) has been absorbed by the gelatin in the acid medium than by that in the neutral one.

Experiment B.—Three gm. powdered fibrin are placed in each of four flasks containing, respectively, the following solutions:

1. 85 c.c. 1/8 molar NaCl + 15 c.c. H_2O
2. 85 c.c. 1/8 molar NaCl + 5 c.c. N/10 HNO_3 + 10 c.c. H_2O
3. 85 c.c. 1/8 molar NaCl + 10 c.c. N/10 HNO_3 + 5 c.c. H_2O
4. 85 c.c. 1/8 molar NaCl + 15 c.c. N/10 HNO_3

Nineteen hours later the excesses of chlorin absorbed by the fibrin in the acid solutions over and above the chlorin absorbed in the neutral mixture are, respectively, 0.00303, 0.004545 and 0.010605 gm.; or, recalculated in terms of sodium chlorid, 0.005, 0.0075 and 0.0175 gm.

Experiment C.—Three gm. powdered fibrin are placed in each of five flasks containing, respectively, the following solutions:

* From the Joseph Eichberg Laboratory of Physiology in the University of Cincinnati.

1. 40 c.c. 1/6 molar NaCl + 10 c.c. H_2O
2. 40 c.c. 1/6 molar NaCl + 2.5 c.c. N/10 Lactic acid + 7.5 c.c. H_2O
3. 40 c.c. 1/6 molar NaCl + 5 c.c. N/10 Lactic acid + 5 c.c. H_2O
4. 40 c.c. 1/6 molar NaCl + 7.5 c.c. N/10 Lactic acid + 2.5 c.c. H_2O
5. 40 c.c. 1/6 molar NaCl + 10 c.c. N/10 Lactic acid

Twenty hours later the excesses of chlorin absorbed by the fibrin in the acid solutions over and above the chlorin absorbed in the neutral mixture are, respectively, 0.0010605, 0.0037875, 0.006969 and 0.0113625 gm.; or, expressed in equivalents of sodium chlorid, 0.00175, 0.00625, 0.0115 and 0.01875 gm.

It has been customary in the modern writings on chlorid retention to assume that it is retained as sodium chlorid, and it is for this reason that in the experiments thus far detailed we have recalculated the value of the chlorid retention in terms of sodium chlorid. Chlorid is, however, better retained by acidified protein than by neutral protein even when it is offered in another form. Experiment D demonstrates the increased chlorid absorption under the influence of an acid in the case of calcium chlorid.

Experiment D.—Three gm. powdered fibrin are placed in each of five flasks containing, respectively, the following solutions:

1. 40 c.c. 1/6 molar $CaCl_2$ + 10 c.c. H_2O
2. 40 c.c. 1/6 molar $CaCl_2$ + 2.5 c.c. N/10 HNO_3 + 7.5 c.c. H_2O
3. 40 c.c. 1/6 molar $CaCl_2$ + 5 c.c. N/10 HNO_3 + 5 c.c. H_2O
4. 40 c.c. 1/6 molar $CaCl_2$ + 7.5 c.c. N/10 HNO_3 + 2.5 c.c. H_2O
5. 40 c.c. 1/6 molar $CaCl_2$ + 10 c.c. N/10 HNO_3

Twenty-four hours later the excesses of chlorin absorbed by the fibrin in the acid solutions over and above the chlorin absorbed in the neutral mixture are, respectively, 0.00303, 0.004545, 0.00606 and 0.010605 gm.; or, expressed in equivalents of calcium chlorid, 0.004735, 0.0071025, 0.00947 and 0.0165725 gm.

It would take us too far afield to discuss why chlorid is better retained by protein in the presence of acid than in its absence. It is sufficient to point out that the observed behavior is probably nothing but an isolated illustration of the adsorption of a dissolved substance by a colloid, which, as so frequently the case, is decidedly better when an acid is present than when it is absent. To the adsorption effect may, perhaps, be added a chemical one, for there is some evidence that an acid protein combines chemically with neutral salts in a way that neutral protein does not.

The increased amount of chlorid retained by proteins under the influence of acid is of a magnitude to cover easily any amount ever found retained by patients. Rarely are more than from about 10 to 50 gm. of (sodium) chlorid held in the body. Choosing for illustration Experiment A as a basis for calculation, we note that at the end of nineteen hours the acidified gelatin has absorbed an amount of sodium chlorid in excess of that absorbed by the neutral gelatin amounting to 0.61 per cent. of the original dry weight of the protein. At the end of another twenty-three hours the figure has risen to 1.22 per cent. If we choose the very liberal figure that but one-fourth the normal body weight is dry substance (of which more than 95 per cent. is colloid), this means that a man weighing 75 kg. (165 pounds) developing the ability to retain even 0.61 per cent. more salt is already able to retain 114 gm. of sodium chlorid, or if the higher figure is chosen, twice this amount.

These experiments have also a general biologic interest in connection with the question of the "permeability" of cells to different substances. It is scarcely conceivable that any one will maintain gelatin disks or fragments of powdered fibrin to be surrounded by "membranes," and yet observations of the type described in these paragraphs when made on living cells or tissues are constantly used as "proofs" for the existence of "membranes" about cells and of their alterable "permeability." Thus, it has been maintained that "living" cells are "impermeable" to sodium chlorid and to other salts, but become "permeable" on the addition of acid or of substances which indirectly lead to a production and accumulation of acid in the cells (chloroform, ether, cyanid, etc.). Would any one by similar reasoning maintain that gelatin plates and fibrin flakes lying in a "physiologic" sodium chlorid solution are "osmotic" systems surrounded by "impermeable" membranes which become "permeable" to sodium chlorid when an acid is added?

Perhaps these experiments will serve to illustrate anew the fruitful consequences of the application of colloid-chemical principles to medical and biologic problems. As they have proved adequate in the explanation of the many phenomena characteristic of water absorption by protoplasm they will also explain without contradiction the absorption and secretion of dissolved substances.

THE OCCURRENCE OF EDEMA FROM LARGE DOSES OF SODIUM BICARBONATE

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There are a number of pathologic conditions in which large doses of sodium bicarbonate or other alkalies are indicated. The report of the two cases below, particularly Case 1, may serve to draw attention to an occasional consequence of such large administration of alkalies, which may lead to wrong conclusions if the possibility of its occurrence is not kept in mind. The condition referred to is the occasional appearance of generalized or localized edema in the course of administration of sodium bicarbonate.

Case 1.—Woman, aged 51, was seen first, July 30, 1913. The patient had had diabetes mellitus for several years to her knowledge, and doubtless for some time before its discovery. The condition which I was called to see was a large carbuncle on the back between the shoulders. The urine at this time contained 5 per cent. of sugar. Diacetic acid and acetone were present. The carbuncle was incised and dressed daily with iodin and sterile gauze. The presence of diacetic acid and acetone in the urine precluded the institution of a carbohydrate-free diet and no attempt was made to reduce the carbohydrate intake to a minimum. The infection between the shoulders did not get along satisfactorily, several new boils developed at various points, emaciation was rapid, and the prognosis looked doubtful. The treatment from July 30 to August 15 consisted in a moderate reduction of carbohydrates, an abundance of meats, eggs, green vegetables, cream, coffee and tea. Forty to sixty grains of sodium bicarbonate were given four times daily during this period. The ferric chlorid reaction for diacetic acid remained constant, however. Drowsiness appeared August 15 and went on to

a state of semicoma. There were movements in response to stimuli, the patient would swallow when drink was placed to her mouth, there was no response to questions and the sphincters were relaxed. The daily amount of sodium bicarbonate was increased at the first sign of approaching coma until the patient was getting 6 drams by mouth and one or two rectal injections daily, each containing 1 ounce of sodium bicarbonate. It is not possible to say how much of this was absorbed, as the injections were not well retained. The foregoing intensive form of alkaline medication did not prevent the drowsiness from deepening into a state of semicoma. The coma did not become absolute. The patient would swallow at any time, so it was possible to keep up the alkalies by mouth. Edema of the fingers and hands was noted at the beginning of this semicomatose period. The feet and ankles were next involved. The edema increased until the patient presented a condition of complete anasarca —edema of the extremities, face, eyelids, forehead, abdominal wall and back. Definite ascites could not be ascertained. Nephritis, heart, liver or other involvement as a cause for the edema could be ruled out. The condition was recognized and the sodium bicarbonate discontinued. The edema began to decrease appreciably the second day after, and was gone one week after the alkaline medication had been stopped. The patient made a slow recovery from her acidosis, the carbuncle and furunculosis disappeared, the diabetes was eventually controlled by a suitable dietetic regimen, and at the present moment (November, 1914) she is feeling well and attending to her household affairs.

CASE 2.—Woman, aged 24, convent nun, was examined in August, 1914. Her complaint was a pain in the epigastric region which had been present nearly every day for one year. A similar condition had existed when she was 17 years old. The pain came on a few minutes after eating and lasted one or two hours. The intensity of the pain varied from a dull ache to a sharp, knife-like pain. It was more severe after the heavy midday meal than after the lighter breakfast or supper. There was occasional nausea in the morning, but no vomiting. The pain was relieved at once by sodium bicarbonate or other alkaline treatment. The usual weight was 154, the present weight 132. The history and examination led to a diagnosis of ulcer of the stomach or duodenum. The patient was placed on an ulcer diet and kept in bed. She was given a powder containing sodium bicarbonate and calcined magnesia and directed to use a level teaspoonful in milk every three hours. This treatment gave her symptomatic relief and its continuance was advised when the patient left the hospital. She was then not seen for a period of three weeks, during which time the foregoing alkaline mixture was used freely and in greater amount than had been advised. The exact amount of sodium bicarbonate which was used daily could not be determined, but was approximately 4 or 5 drams. Examination at the end of this three-week period showed a marked edema of the feet, ankles and the lower part of the legs. The edema was similar in its general appearance and pitting characteristics to the edema of a cardiac trouble, but it could not be explained by any trouble in the heart, kidneys, liver or elsewhere. The possibility of a sodium bicarbonate edema was recognized, the alkaline treatment was discontinued, and without rest in bed, change in her habits, or other therapeutic agent, the edema disappeared completely in three days. (The subsequent history of this patient will not be related, as it does not have to do with the title of this article.)

The treatment of diabetics with threatened acidosis and coma by means of sodium bicarbonate is a common procedure. Staubli and Blum[1] state that such medication may cause an increase in body weight without real obesity because of a watery saturation of the tissues. The body weight rapidly falls when the alkaline medication is stopped. They believed that the sodium bicarbonate was retained in the tissues and attracted water.

E. Pfeiffer[2] has also considered the pathogenesis of sodium bicarbonate edema. He thinks the explanation is to be found in the increased amount of sodium in the tissues. This view is not held by Widal, Lemierre and Cotoni.[3] They do not believe that it is a question of sodium alone or the excessive amounts ingested. They have shown that a diabetic retains chlorids and water under the influence of sodium bicarbonate, which retention is in proportion to the condition of the kidneys and the degree of acidosis.

The property which sodium bicarbonate possesses of producing a chlorid retention, and in marked cases edema, is not peculiar to diabetics. The amount necessary to produce a retention of chlorids has been determined experimentally to be 20 gm. or more daily. This amount is larger than the usually prescribed therapeutic dose in stomach affections, but may be much below the amount given in cases of threatened diabetic coma.

In a general way the chlorid retention is in proportion to the amount of sodium bicarbonate ingested, but that is not the only factor. Cachectic and toxic diabetics, individuals with poor renal elimination, and emaciated subjects rapidly progress to chlorid and water retention, sometimes edema, from doses of sodium bicarbonate which in milder diabetics or individuals in a fair state of nutrition and having good elimination would produce only the "preedemic" state of the French writers. Widal believes further that the sodium chlorid content of the food plays a part in determining the amount of chlorid retention and edema after the use of sodium bicarbonate.

Charcot and Vulpian, and then Hayem[4] called attention to the occurrence of edema or water retention after the administration of sodium bicarbonate to healthy men as far back as 1890. Hayem was able to demonstrate such a retention after the use of from 20 to 30 gm. of sodium bicarbonate daily. This corresponds to Case 2 reported above. More recently, Blum demonstrated the same thing, but thinks that the water retention does not go on to the edema stage in healthy individuals. It is rather difficult to determine this point in an experimental way in healthy persons, because large amounts of sodium bicarbonate given to such persons causes diarrhea, vomiting and other digestive troubles which necessitate the discontinuance of the drug. Blum was able, however, to determine this point with two normal persons. One was a healthy man of 28, who was put on a chlorid-free diet to which was added 12 gm. of sodium chlorid daily. The chlorid balance was determined, and then 40 gm. of sodium bicarbonate was given daily for twelve consecutive days. During this period there was a chlorid retention of 32 gm. and an increase of body weight of 2.5 kg. This chlorid retention and increased body weight disappeared promptly on stopping the sodium bicarbonate. The experiment was later repeated on the same man with identical results, the figures varying but slightly.

Widal, who seems to have given most attention to sodium bicarbonate edema, reports a number of cases.

1. Staubli and Blum: Ueber die Rolle von Salzen bei der Entstehung von Oedemen, Verhandl. d. 26 Kong. f. inn. Med., Wiesbaden, 1909, p. 122.

2. Pfeiffer, E.: Wasserretention durch Natronsalze, Verhandl. d. 28 Kong. f. inn. Med., Wiesbaden, 1911.

3. Widal, F.; Lemierre, A., and Cotoni: Le rôle du chlorure de sodium dans les oedèmes provoqués par le bicarbonates de soude a dose massive, Sem. méd., 1911, No. 11.

4. Hayem: Leçons de therapeutique; les medications, Paris, 1890, Series 2, p. 222.

One case (the others were similar) concerned a much emaciated diabetic of 28 with threatening acidosis. Forty gm. of sodium bicarbonate had been given daily for six days. The dose was then raised to 80 gm. daily, under which treatment his stupor began to lessen. The body weight increased 3 kg. during the first three days of this alkaline medication, and at the end of eight days the increase amounted to 9 kg. Edema appeared at this point and involved the hands, feet, legs, thighs, abdomen and face. The sodium bicarbonate was stopped and in three days the body weight had decreased 6 kg., with disappearance of the edema. The increase in body weight and edema corresponded with a fall in the urinary chlorids from between 18 or 31 gm. daily to 7 gm., the diet being the same. The urinary chlorids then jumped to 35 gm. daily, when the sodium bicarbonate was stopped. Later in an experimental way, Widal was able to increase or decrease the body weight of this patient at will by adding or taking away sodium bicarbonate. A chlorid retention was uniformly found to correspond to the period of increased weight.

CONCLUSIONS

1. Sodium bicarbonate in large doses may cause an increase in body weight which may go on to the appearance of edema.

2. This increase in weight is caused by a retention of chlorids in the body with resultant water retention.

3. The increase of body weight or edema is more likely to appear during the administration of large doses of sodium bicarbonate to cachectic diabetics with acidosis.

4. It can be produced in an experimental way in normal individuals.

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UNHEATED VACCINES

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The purpose of this paper is to encourage the use of unheated vaccines.

The preparation of unheated vaccines, which have had their vegetative powers destroyed by members of the phenol group, has been suggested previously by others. Park and Williams[1] say, "It has lately been suggested that instead of killing by heat the vaccines may be killed by adding, when made, 0.5 per cent. carbolic acid, or 0.25 per cent. cresol compound." This is the only reference I have found, relative to the use of unheated vaccines killed by members of the phenol group.

Crandon[2] gives a summary of the literature on the use of killed and living vaccines, proving conclusively the great advantage of unheated over heated vaccines, as heating even to 60 C. destroys in a great measure their immunizing power.

Two years ago I decided against heating my vaccines, provided I could discover some method of destroying their vegetative powers with less change in their chemical composition than is induced by heat. My choice of germicides finally narrowed down to two: the ultraviolet ray and the phenol group. As yet I have not used the ultraviolet ray. A good method of killing most bacteria I found to be their immersion for twenty-four hours in 0.25 per cent. tricresol solution at 37 C.

TECHNIC

The only liquid used is 0.25 per cent. tricresol in previously sterilized physiologic saline solution. All materials coming in contact with the vaccine, during or after preparation should have been sterilized in advance. The culture medium to be preferred is a 2 per cent. glucose, 6 per cent. glycerol-blood-agar, neutral to — 1 to phenolphthalein. It is sometimes of advantage to run a soft blood medium over a substratum of a more solid medium.

The bacteria are removed from the surface of the culture medium by means of glass rods drawn thin in the Bunsen flame to give them flexibility. The ends of the rods are made sufficiently thick to prevent penetration of the medium. A few drops of the tricresol solution are placed on the surface of the culture and the growth can easily be removed with the aid of these rods, even from a fairly soft medium.

The vaccine is then well emulsified by shaking in a test-tube or flask with beads or broken glass. The emulsion is filtered through sterile paper to remove clumps of bacteria. Sufficient tricresol saline solution is added to bring the minimal dose to 0.05 to 0.1 c.c.

After twenty-four hours in the incubator, the suspension is tested for sterility by inoculating a loopful into a tube of bouillon, a loopful of which is run over each of a number of sterile slants of the medium used in the primary culture. Twenty-four hours in the incubator has been used as the limit of the test for sterility. Objections may be raised against my practice of dividing the vaccine in a number of ampules, before placing in the incubator for twenty-four hours to sterilize, but I consider none of them valid.

ADMINISTRATION

For injection, a 1 to 2 c.c. all glass syringe with platinum-iridium needle will be found economical, as this apparatus may be sterilized without injury by moist or dry heat. A convenient arrangement is to draw out, at the closed end, a moderately heavily walled test tube in which the syringe may be placed, so that the constriction will prevent the point of the needle from reaching the tip of the tube. If the vaccine is to be given at some distant place, this apparatus should be slipped inside a larger tube previous to sterilization. If sterilized by dry heat, a number of these syringes may be kept on hand indefinitely, ready for use.

A method of determining the proper dosage, which is of value in many cases, is to introduce the minimal dose intracutaneously and double the dose daily, until a fairly severe local reaction is obtained, then to give that amount every four or five days. No definite rule of therapeusis can be laid down; experience is necessary for best results. Probably the intravenous route will be found preferable, both as to rapidity and degree of immunity. At present, insufficient work has been done on the subject to justify the intravenous injection of vaccines as a routine procedure.

EXPERIMENTAL

I used an insufficient number of heated vaccines along with the unheated in similar cases to prove definitely the great advantage of the latter; proof of an established fact is unnecessary. But it must be proved that the vegetative power is removed from the bacteria by the action of 0.25 per cent. tricresol for twenty-four hours at 37 C. At least a thousand different vaccines of each micro-organism should be prepared by this method and every one proved sterile. Then perhaps the sterility might be relied on without testing. In the

1. Park, W. H., and Williams, A. W.: Pathogenic Micro-Organisms, Ed. 5, New York, Lea and Febiger, 1914, p. 221.
2. Crandon, L. R. G.: Surgical After-Treatment, Ed. 1, Chapter Iii, by G. P. Sanborn. Philadelphia, W. B. Saunders Company, 1910, p. 763.

cases in which I have followed the above technic implicitly, the results have usually been better than anticipated. I am still looking for one of the non-spore bearing pathogenic bacteria which will stand 0.25 per cent. tricresol for twenty-four hours at 37 C. without losing its powers of reproduction. I have not experimented with the fungi, but am now experimenting with the tubercle bacillus along these lines. An unheated tuberculin similarly prepared may possibly give the same good immunizing results obtained by the use of living virulent tubercle bacilli by Trudeau, Neufield, Webb, Williams and Barber, Theobald Smith and others.

The above amounts of members of the phenol group do not interfere with such a delicate immunity reaction as complement fixation and probably have little or no influence on such reactions in vivo. This method of removal of vegetative powers might also be applied to sensitized vaccines.

CONCLUSION

Vaccines should not be heated above 37 C. but their vegetative powers should be destroyed by some method which does not change their immunity reactions from those of living bacteria. A method which is apparently successful with most micro-organisms is the use for this purpose of 0.25 per cent. tricresol solution for twenty-four hours at 37 C. Probably any member of the phenol group in the same bactericidal concentration would be satisfactory.

317 Penn Street.

THE PROBLEMS OF GRADUATE MEDICAL INSTRUCTION *

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The subject of graduate medical instruction is attracting much attention at the present time and is becoming a very important problem in medical education. When, ten or more years ago, the medical profession began to give serious attention to the problems of medical education in this country, acting through its most representative body—the American Medical Association—efforts for improvement were naturally directed first to the medical schools themselves. You all know how much the Council on Medical Education has accomplished in the ten years since it was organized, in establishing high standards for medical schools, in forcing many of the poorest schools to close their doors, and in making better schools of those that remain. While much still remains to be accomplished in this direction, the problem of the proper training of medical students may be regarded as practically settled.

The most important problem to-day is that of improving the knowledge of those who are already engaged in the practice of medicine. Many of them have received a very inadequate training, and from the point of view of the public welfare it is as important that these physicians should become better trained, as it is that those about to enter the profession should be well trained.

Recognizing the importance of this problem, the Council on Medical Education has undertaken a study of the present status of graduate medical teaching, with a view to making suggestions for its improvement. It recognizes the need of adequate opportunities for graduate medical study, not only because many members of the profession wish for such opportunities, but because they are essential for the public good. This aspect of the problem, the relation of graduate medical teaching to the public welfare, has received altogether too little attention. We have looked at the subject too exclusively from the point of view of academic teaching. It is commendable to encourage students to carry their studies to the limits of knowledge in any subject, and it is a worthy ambition to have the most complete equipment and facilities for such studies. But after all is not the real underlying spirit of our universities a desire to be of service to the community? Do they not aim to furnish the inspiration that will improve the condition of mankind, and raise the standards of civilization? We have been so fully occupied with the details of medical instruction, and with the difficulties of keeping pace with the growth of medical knowledge, that we have given little thought to this deeper problem of public service. Yet the possibility of public service should be one of the strongest arguments to induce medical schools to take up graduate teaching, and it should influence the line of development of this work.

Returning to the problem of the physicians who have had an inadequate training, where shall they get adequate opportunities for further study? To a certain extent it is practicable for them to attend the regular exercises given in the undergraduate schools, especially the didactic lectures and the clinical demonstrations before a class. The presence of graduates at such exercises does not interfere with the regular instruction. This is not true, however, when we come to consider individual instruction in section teaching. As a rule it is inadvisable to admit graduates to sections of undergraduate students, because the graduate should have special instruction, adapted to his individual needs, and this can be given only at the sacrifice of time which should be given to the regular students. Furthermore, few graduates can afford to give the amount of time that would be required to pursue the studies, as arranged in the curriculum of a medical school. Courses should be provided which are especially adapted to their needs.

The poorly trained men need elementary courses, not advanced courses. Should the medical schools provide such courses? Should elementary courses of this character be provided in graduate medical schools? Or should schools be organized for the special purpose of giving courses of this grade to graduates? There are advantages to each of these plans, and disadvantages as well.

Various independent schools for graduates have been organized in the past. They vary from good to very bad. Some are clearly commercial in type, and are carried on for the direct or indirect gain of the instructors. They are as objectionable as the worst type of proprietary medical schools that formerly flourished in this country, and there is equal reason why they should be abolished.

The existence of such schools shows the weakness of the plan of independent schools. There is the same need of high standards in graduate medical teaching as in the best undergraduate medical schools. The

* Part of an address before the Harvard Medical Society of New York, Nov. 28, 1914.

good independent schools suffer by being placed in the same class with these poor schools, and they should, for their own reputation, seek affiliation with good medical schools or with universities. It is true that in the past medical schools and universities have generally shown so little interest in graduate medical teaching that it has rarely been practicable to secure such affiliation; but these institutions are beginning to recognize their obligations in this matter, and such affiliation should be more feasible in the future. In the near future I think we shall see the best of the independent schools securing such affiliation, and as more medical schools take up graduate instruction, the independent schools which are below standard will become unprofitable and will cease to exist.

And so we come back to the question whether elementary courses for graduates should be given by medical schools or by graduate departments of medical schools. This question in turn raises a question as to the scope of graduate medical teaching. Should it include only advanced courses, or may it also include elementary courses? From an academic point of view, the graduate medical school would naturally give courses more advanced than those offered in the medical school. But even in the department of arts in our universities we do not find a sharp dividing line between undergraduate and graduate courses, and it is often necessary to allow students who are registered in the graduate school to take courses that are clearly recognized as of undergraduate grade. The question whether elementary medical courses for physicians should be given by the graduate school or by the undergraduate school is a matter of convenience of administration rather than of principle.

Notwithstanding these considerations, it is useful to distinguish those advanced courses, which a graduate school ought to give, from the more elementary courses, which it may give as a matter of convenience. I would suggest therefore that the term "graduate medical course" be understood to mean a fourth-year elective or a course of still higher grade; and that courses of a lower grade, but outside the regular curriculum of the medical school, be designated "polyclinic" courses. (I use this term for lack of a better one, and would welcome a better name.) For the sake of avoiding confusion, I hope that the term "postgraduate" will gradually be dropped.

On this basis a medical school might offer graduate courses, or polyclinic courses, without organizing them as a separate department. It might develop a graduate department or school, or it might develop a polyclinic department or school. If a graduate department is organized, this might, as a matter of convenience, take charge of the administration of polyclinic courses. What should be done will depend on the conditions in each individual school. I believe, however, it is a matter of public duty for all good medical schools to consider seriously what they can properly do in the way of graduate or polyclinic teaching.

A cardinal principle in the consideration of this problem is that a medical school's first duty is to provide adequate undergraduate teaching. Until this is satisfactory, the school should bend all its energies to the improvement of its undergraduate course. It follows, as a matter of course, that Class C and Class B schools should not undertake teaching of this sort. A question arises as to how far Class A schools should enter this field. It should be remembered that only the schools in Class A+ are now considered by the Council to be acceptable without qualification. Class A schools need improvement in certain respects, although they do not need such general improvements as those in Class B. It would be wise then for Class A schools to endeavor to attain or to approach as near as possible to the standards of Class A+. They should therefore guard against any dissipation of their energies in graduate teaching. This is especially true of those schools which rank low in Class A. The better schools of this class might undertake graduate or polyclinic instruction during the summer vacation; or some departments might do this during that part of the school year when they are not engaged in undergraduate teaching.

In the latest classification of medical schools there are twenty-nine schools in Class A+ distributed in twenty states. For various reasons not all of these can wisely undertake graduate instruction on an extensive scale at the present time. It is desirable, however, that all of these schools should consider the problem seriously, and that as many as possible should become centers for giving practicing physicians a better training as well as for training undergraduates.

A considerable number of these schools are already doing work of this character, although very few have organized separate departments or schools for the purpose. It should be clearly understood that valuable work in graduate teaching can be done without such formal organization. It is the quality of the work and not the quantity that is important. Many of these schools can at least offer to qualified students opportunities for advanced study in connection with the research work which is carried on in various departments. One service which the Council on Medical Education can render is to collect data about opportunities of this sort and publish this information. It will then be available for those who seek such opportunities for study. Many students go abroad to study because they do not know about the opportunities which lie close at hand in this country, and they have no ready means of gaining this information.

The standards of graduate instruction should be just as high as those of undergraduate instruction. Therefore a school which is uniformly poor would not be acceptable for graduate teaching. But some schools, which do not rank high when attempting to give a complete medical training, may have some strong departments, which are as good as those of high-grade schools. Graduate teaching by these departments would be acceptable. Therefore some of the poorer medical schools might well consider the proposition of a change to graduate teaching, provided they limited the field of such teaching to those subjects in which the instruction would be on a par with that in the best medical schools. Such schools would generally become polyclinic schools. They should seek affiliation with medical schools of high standing, for only in this way can they wipe out the stigma of their previous low rank.

The limitation of the field of graduate teaching to those subjects which can be well taught is an important consideration also for the independent "polyclinic" or "postgraduate" schools which now exist. Some of these schools have developed certain departments so that they will compare favorably with those of very good medical schools; yet, in attempting to cover the whole field of medicine, they have other departments so poor that the school as a whole must

take very low rank, when compared with regular medical schools. Again, we may find in some of these strong departments excellent teachers, who stand very high in the estimation of the profession; while in the same faculty are instructors who would be ranked as incompetent teachers by a low-grade medical school. Now that attention is being directed to standards of graduate instruction, and to the relative standing of these schools, the best men cannot afford to stay in such company. It necessarily follows that these schools must reorganize—perhaps on a more limited scale—or they must suffer a distinct loss of reputation. Such reorganization would greatly facilitate that affiliation with good medical schools which the independent polyclinic and graduate schools should seek. Naturally such changes cannot be brought about at once, but it is time that they be given serious consideration.

Let us pause a moment and summarize the ideas which have been advanced. Graduate medical instruction is one of the most important problems of medical education to-day. It is of great importance for the public welfare, because it aims to give a better training to those who are now practicing medicine. It therefore deserves careful consideration by our best medical schools. Graduate teaching should be on the same high plane as undergraduate teaching, and it should be attempted only so far as it can be placed on this plane. It should be under the control of good medical schools, or of universities; for this is the best way to maintain proper standards. The best independent schools which give instruction for graduates will probably be able to secure, in the near future, affiliation with good medical schools. The others will be forced by public opinion to reorganize and to raise their standards. Otherwise they will suffer in prestige and will become unprofitable. Instruction for graduates must be adapted to the students previous training and experience. Therefore it may range from very elementary courses to the most advanced research work. It is useful to distinguish the advanced courses from those of undergraduate grade; therefore the terms "graduate course" and "polyclinic course" are suggested. Any good medical school may offer to graduates as much or as little as it chooses in this broad range of studies, provided it is good work of its kind.

We may now consider briefly a few general topics in connection with graduate teaching.

ADMISSION REQUIREMENTS

There can be no uniform minimum admission requirements of an educational nature, as in regular medical schools. For the benefit of the public any earnest, reputable practitioner, who is licensed by the proper authorities to practice medicine, should be able to find somewhere an opportunity to improve his medical knowledge. This does not mean that he should be allowed to enter every graduate or polyclinic school, but that some schools should give courses to which poorly trained physicians may be admitted. It should be recognized that these schools are performing as useful duties as the schools which offer only advanced courses. The admission requirements in different schools will therefore vary with the kind of courses offered. The only general principle should be that each individual must have an adequate preparation for any course to which he is admitted.

CERTIFICATES

It is generally recognized that there are serious objections to the custom, which has been common in the "postgraduate" schools, of granting elaborate diplomas after short or inadequate courses. Such a diploma or certificate is likely to deceive the public, who may regard it as equivalent to a degree. People are easily led to believe that the possessor of such a certificate is a full-fledged specialist in a subject mentioned in the certificate. Unscrupulous physicians take advantage of this fact, and no one brings more discredit on the medical profession than these poorly prepared, so-called "specialists." The better "postgraduate" schools acknowledge the existence of this evil and are ready to join in a movement for its eradication.

At the Harvard Medical School, before the graduate school was organized, this custom prevailed of granting a certificate for attendance at single short courses. The certificate was unpretentious in form and it often provoked severe criticism from those who wanted it for advertising purposes; consequently the evil results were avoided in part. When the administrative board of the graduate school considered this problem, it recommended a radical change of policy, and its recommendations were adopted by the faculty of medicine. Since Oct. 1, 1912, certificates have been granted only after four months of continuous work, which has occupied the whole day. This is equivalent to a half-year in the undergraduate school. In addition to this, candidates for certificates must announce the fact that they are candidates at the beginning of their course, they must be accepted as candidates by the administrative board, and they must choose a systematic course of study which receives the board's approval. If their work in the individual courses is approved by the instructors, they are then eligible for an examination. The administrative board will grant a certificate only after this examination has been passed successfully. A student's previous medical or scientific training and experience are considered in deciding whether he may be accepted as a candidate for a certificate.

Under these regulations the school is warranted in setting its stamp of approval on the successful candidates. The certificate was properly given the form of a diploma, and it is signed by the dean and the members of the examining board. In the past two years, out of more than one thousand students only six have received a certificate. The average length of the course of study of these men was between six and seven months. The faculty of medicine has recently adopted the further recommendation of the graduate school, that after June 1, 1915, the time requirement for the certificate be increased to eight months. This will make the work required equivalent to one year in the undergraduate medical school.

What shall be done about students who attend for a shorter period and wish a testimonial or a statement about their work? We have met this problem by granting an "official statement." This is a typewritten statement on the regular letter-head of the school. It is given official standing by the signature of the dean or the secretary. It is a plain statement, attesting the fact of attendance, the duration and character of the course, and any other essential facts, including the marks in any authorized examinations the student may have taken.

When these regulations about certificates and official statements were adopted, we were naturally interested to see whether the effect would be to lower the number of students. If the regulations have kept students away, other attractions have more than offset the loss, for our numbers have shown a gratifying increase. We believe that it is practicable for the better "post-graduate" schools to adopt similar requirements, on the basis of four full months of study as a minimum requirement for a certificate.

STANDARDS FOR GRADUATE MEDICAL SCHOOLS

On what basis may approval of graduate medical schools be granted? Not on admission requirements, for reasons already stated. Not on the requirement of a definite period of attendance, for such a requirement would materially limit the usefulness of the school. However much we may wish graduates to take long courses, the fact remains that after they have established themselves in practice they can seldom leave for more than a short period of study. We should encourage them to improve their medical knowledge, even if they can get only a little at a time. Physicians in the neighborhood of graduate medical schools should even be encouraged to take single exercises, as occasion offers, from time to time. Again, we cannot base our approval of an institution on the number of subjects in which it gives instruction, for some of the best instruction will be given in institutions with a special, limited field.

Approval of these schools may be based fairly on three factors: first, and most important from this point of view, the adoption of satisfactory regulations about granting certificates; second, the limitation of the field of work to subjects in which the equipment and facilities for teaching are equal to those of approved medical schools; third, a guarantee of the quality of instruction by the existence of a corps of instructors who would be acceptable in an approved medical school.

STANDARDS IN SPECIALTIES

The problem of establishing standards of preparation in the various specialties is attracting much attention at the present time. It is a complex problem and one that is difficult to solve, yet it is becoming more and more important for us to reach a sensible solution. It is not my intention to discuss this problem on this occasion, but merely to point out that the graduate medical schools are concerned in its solution. Any standards which may be adopted must insist on a certain amount of systematic advanced instruction. Such instruction can best be organized in graduate medical schools. Therefore the establishment of standards for these schools is an essential part of the solution of the problem of standards in the specialties.

HIGHER DEGREES IN MEDICINE

By this we mean degrees that are higher than that of Doctor of Medicine, and for the acquirement of which the degree of M.D. will be a prerequisite. Here is another important problem that is being forced on us. It is a natural development from the problem of standards in the specialties. If, after graduation, a student has pursued advanced studies for a sufficiently long time, so that he is especially proficient in his chosen subject—in arts, in many of the sciences, and in some professional lines—he is granted a special degree to attest his proficiency. Why should he not receive similar recognition in medicine? From the point of view of the health and benefit of the community, the recognition of special skill or training in medicine is fully as important as in the other subjects in which such recognition is granted.

The universities are recognized as the authorities most able to establish proper standards for advanced study in medicine. Therefore, it is desirable for them to grant such higher degrees. Some universities have already taken a definite stand in this matter. As stated above, the subject is under consideration at Harvard. No one is warranted at present in making a definite statement as to what the decision will be, but it seems likely that Harvard will adopt the plan of a single advanced degree in medicine, and that in the degree mention will be made of the special field of medicine in which distinction has been won. This usage would be similar to that in the case of the degree of Doctor of Philosophy.

The subject of higher degrees in medicine has been selected by the Council on Medical Education as a topic for discussion at its next conference, in February. It is hoped that this discussion may help toward a general agreement as to what is best to be done in this matter.

THE TREATMENT OF HEMORRHAGE BY INJECTION OF BLOOD*

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Those who have investigated its therapeutic possibilities firmly believe that blood and derivatives of it are of value in the treatment of persistent hemorrhage. Yet there is a surprising failure on the part of the profession to utilize thoroughly this means of treatment, and, in view of this fact, it seems desirable that certain features of interest be made the subject of special consideration.

I. SIMPLE AND SATISFACTORY METHODS FOR BLOOD INJECTION

Those who believe that blood constitutes a valuable remedy in the control of hemorrhage either advocate serum from the lower animals or tend to employ a needlessly elaborate technic when human subjects furnish the supply.

The use of serum from the lower animals is subject to some objection — it may not be available when most desired, anaphylactic reaction is always a possibility, there is some danger of tetanus, and when preserved there is a tendency to contamination as well as possible loss of efficiency because of age.

If human blood be used it is my belief that whole blood possesses the beneficial qualities common to serum or other derivatives and that it does not contain elements which are more likely to be harmful to the patient. This belief is upheld by clinical results.

The methods commonly employed in the preparation of human blood after withdrawal from the donor consist in allowing it to stand until the serum separates, or in centrifuging in case of urgency. The serum is then injected subcutaneously or intramuscularly. A more simple and regularly successful technic, and one which reduces danger of infection to a minimum, consists in injecting whole blood into the patient immedi-

* From the Memorial Institute for Infectious Diseases.

ately on withdrawal from the donor. A 20-c.c. or larger ground-glass syringe is sterilized, preferably by the dry method, and the inner surface lubricated with sterile petrolatum. Blood is withdrawn in the usual manner from a cubital vein of the donor; the needle is then inserted beneath the subcutaneous tissues of the back of the patient and the blood injected. There is no need for haste. This procedure not only has the advantages of simplicity and promptness, but does away with likelihood of contamination during transfer of blood.

In unusual instances, when much blood must be obtained at one time, it may be aspirated directly into a sterile bottle provided with a coil of wire, immediately defibrinated and kept in the ice-box until desired. This blood should be used within a moderate number of days and contamination must be guarded against.

II. TREATMENT OF HEMORRHAGE FROM THE UTERUS

Leaders in special departments of surgical work are prone to overlook the possibilities of blood therapy. For example, among the many publications recently devoted to the treatment of uterine hemorrhage, there is a general failure to mention the therapeutic value of blood or its derivatives.

Especially in those cases in which discovery or removal of the cause proves impossible, blood is a valuable aid. In many ways it takes precedence over radium and therapy with filtered Roentgen rays, for these are obtainable only in a limited number of large hospitals, and necessitate a considerable outlay of time and money. Moreover, they tend to produce atrophy of the ovaries and are not entirely devoid of danger.

That injected blood is at least worthy of trial is indicated by two cases which represent the results obtainable in patients with "idiopathic" hemorrhage.

CASE 1.—A multipara, aged 30, had hemorrhages from the uterus for nine months. Examination was negative. Curettement checked the flow for two months, after which it recurred as previously. At the desire of the patient, supravaginal hysterectomy was performed in preference to blood injection. After three months began continuous bleeding from the cervical stump, associated for the first time with petechial hemorrhages of the lower extremities. Subcutaneous injection of 25 c.c. of whole blood, obtained from the husband, caused prompt cessation of bleeding. This treatment was twice repeated. Hemorrhages did not recur.

CASE 2.—Patient, near the menopause, had flowed profusely for many months. Minor surgical measures of various sorts were unavailing. Five subcutaneous injections of blood resulted in cessation of flow. One year later bleeding recurred. Five injections of blood from the husband, given every second day in amounts varying from 10 to 20 c.c., resulted in permanent recovery.

III. BLOOD INJECTION VERSUS TRANSFUSION

It is believed that the transfusion of blood is often advised when less heroic measures would prove quite as satisfactory. Thus in *hemorrhage of the new-born*, when the patient is seen before life is in danger from exsanguination, blood injection is indicated. For the purpose of checking hemorrhage this is essentially as efficacious as transfusion; at least it has proved satisfactory in all except one of several cases so treated by me.

If anemia is profound more blood must be provided. This may be done by any one possessed of ordinary surgical ability. An extremely large (100-c.c.) ground-glass syringe lubricated with liquid petrolatum is employed. This is provided with either a large needle or a small cannula tip. After a 1-inch exposure of the child's external jugular or femoral vein, the syringe is filled and the blood injected into the vein of the patient in the direction of the heart.

In *other types of anemias, notably secondary anemia* consequent to prolonged bleeding, blood injection again has a wide field of usefulness. It is the procedure of choice when bleeding has not been permitted to reach the point of exsanguination.

Likewise in chronic wasting diseases and infections with grave outlook, in tuberculosis with unfavorable prognosis and in other conditions of like nature, the trial of repeated injections of blood merits consideration. Although unable to present an assortment of cases of this type sufficiently large to be convincing from a statistical point of view, I anticipate that the future will show much benefit from this form of therapy. Except in extreme cases in which red cells and hemoglobin have fallen to the point at which they are incapable of performing their necessary share of work, transfusion promises no more permanent aid than the repeated injection of small amounts of whole blood.

SUMMARY

1. Repeated subcutaneous injection of whole blood immediately on withdrawal from a healthy donor is a simple procedure of value in the treatment of hemorrhage.

2. In many cases of uterine hemorrhage this therapy obviates the need of operative interference or expensive and time-consuming Roentgen-ray treatment.

3. For persistent hemorrhage of moderate severity—for example, hemorrhage of the new-born—blood injection rivals transfusion in results achieved, and is the method of choice because it requires little technical skill. In infants with severe anemia, intravenous injection of blood by means of a 100-c.c. lubricated ground-glass syringe is a worthy substitute for a transfusion operation.

4. Hemotherapy for chronic anemias, wasting diseases and infections with grave outlook deserves serious consideration. It is not unlikely that the stimulating effect of repeated injections of blood offers more hope in this field than does the more difficult procedure of one or even two transfusions of large quantities of blood.

104 South Michigan Avenue.

Value of Whole-Time County Health Officer.—North Carolina was one of the first states to employ whole-time county health officers. A recent bulletin of the State Board of Health gives an indication of the value of the service rendered by such officers in improving health conditions and reducing the death-rate. In Robeson county, in which Dr. Boney W. Page, Lumberton, is the whole-time county health officer, the death-rate was reduced from 18 per thousand in 1912 to 12 per thousand in 1914. The reduction in the number of deaths from various diseases for 1914 as compared with 1912 was as follows: tuberculosis, 147 to 70; diarrheal diseases of infants, 90 to 65; typhoid fever, 33 to 9; small-pox, 16 to 1; diphtheria, 14 to 3; whooping-cough, 35 to 9; pneumonia, 130 to 85; total from all diseases, 907 to 730. This showing is made in the face of the fact that 55 per cent. of the population of the county consists of Indians and negroes, and that the death-rate of the negroes is over 40 per cent. higher than that of the white population, and also that the county lies in the malarial area. The death-rate from malaria has been reduced 75 per cent. in three years, and that of other preventable diseases 70 per cent. The saving in lives is said to represent a money value of $200,000.

DOUBLE DETACHMENT OF THE RETINA AS A SEQUENCE TO NEPHRITIS

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Albuminuric retinitis as a complication of a nephritic lesion is not an unusual condition. While encountered in from 10 to 25 per cent. of all cases of contracted kidney, it is not seen so frequently in the parenchymatous form of nephritis, nor has it in the latter condition such an evil prognostic significance.

Detachment of the retina, as a result of serous effusion following a lesion of the kidney, is an exceedingly rare affection. The literature on the subject is very scanty and in conversation with local oculists of considerable experience I have been unable to elicit a history of one such case.

The infrequency of this condition is my reason for reporting the following case:

W. K., a telegraph operator, who had five years ago been treated for "kidney trouble" and was thought to have been cured, about the second week in February, 1914, noticed a blurring of vision. This rapidly increased and he found himself unable to read the manuscript of his work. This attack was accompanied by headache and vomiting. The physician whom he consulted diagnosed his condition as glomerular nephritis and an oculist to whom he was referred found albuminuric retinitis present in both eyes.

March 27, I visited him in consultation with his family physician. At that time the patient was confined to bed, being hardly able to sit up, and his vision was reduced to the perception of light and darkness. The examination of the eyes disclosed the following condition:

Right Eye: Vision reduced to perception of light; pupil dilated and did not respond to light. Rotation of the eye was normal. Beyond the dilated pupil there was no external evidence of an eye lesion.

Fundus: There was a grayish reflex instead of the usual pink retinal glow. The optic nerve was decidedly blurred, veins swollen and tortuous. At the region of the macula there was the characteristic appearance of albuminuric retinitis. Running in an inverted horseshoe fashion and beginning about two nerve-heads' width below the papilla was an elevated tumor giving a grayish-green reflex and seen best with a plus 12.00 lens behind the ophthalmoscope. (Optic Nerve seen with plus 1.00.) On top of this tumor were markedly tortuous small blood-vessels. Tension was normal, or if anything, very slightly elevated. The left eye was practically the same as the right. Three days later, I made a second examination. The area of detached retina now extended above as well as below the optic nerve, so that the only attachment of the retina was around the circumference of the papilla. The patient maintained that his vision was somewhat improved, although a test made did not tend to confirm his belief.

Transillumination showed a clear glow, eliminating the remote possibility of a solid tumor, as the cause of the detachment.

Urinalysis: Color, usually light amber, occasionally dark. The specific gravity was 1.002. The albumin ring was well marked. There was no sugar. The sediment was granular, and there were hyaline and epithelial casts, as well as kidney epithelium. The phenolsulphonephthalein test showed an excretion of 15 per cent. in two hours.

Systolic blood-pressure was 210.

There was no edema of ankles, swelling under the eyes, ascites or evidence of serous effusion elsewhere in the body. It may be of interest to note that one married sister had an attack of albuminuria with her last pregnancy. The patient died, April 23, 1914.

While the majority of the well-known text-books say nothing on nephritic conditions as a cause of detached retina, Roemer[1] mentions its possibility and Weeks[2] cites a case very similar to the one just reported.

Two articles by Leber[3] and Verderame[4] discuss this condition.

I am indebted to Drs. David Jewett, van der Beek and Frank Barber for their kind cooperation.

1. Roemer: Text-Book of Ophthalmology, Foster's Translation, 1913, p. 755.
2. Weeks: Diseases of the Eye, 1910, p. 482.
3. Leber: Arch. Ophth., 1909, lxx, 200.
4. Verderame: Klin. Monatsbl. f. Augenh., 1911, xlix, 452.

INTRA-URETHRAL BREAKAGE OF VACUUM ELECTRODE

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The time of the physician is so encroached on nowadays by salesmen who are persistent as to the quality of their wares, that sometimes one is apt to be misled by their statements, and by so doing may cause some disastrous results. As many of these results are never known to any except the man who is unfortunate enough to attain them, it seems to me only just that if one has an untoward accident with a so-called harmless instrument he is only acting fairly in making mention of it, that others may avoid like consequences.

About a year ago a very persistent salesman succeeded in selling me a set of high-frequency vacuum electrodes. Among them was one for intra-urethral treatment. On examining it I remarked to the salesman that I believed it to be a dangerous instrument, since a breakage of the tube would leave a foreign body in a place very difficult to reach; but he assured me that no such thing had ever occurred. Nevertheless, on receipt of the instruments I was slow to make use of this particular one, and for several months it remained only an ornament in my instrument case. At last, however, a case presented itself in which I believed this particular modality might be utilized with benefit, and I proceeded to use the apparatus that I had feared so much at first. I administered a number of treatments with no unpleasant results, but one day while giving a treatment the tube snapped, my patient at once complained of excruciating pain and I realized that my forebodings had come true.

On attempting to remove the broken instrument I encountered much resistance, and it finally dawned on my mind that the vacuum had probably acted to draw the membranes of the urethra into the broken ends of the tube. I felt that I was in a very serious predicament, though not quite so serious as that of my patient. A liberal application of a local anesthetic somewhat relieved the pain that was occasioned by the indrawing of the mucous membranes by the action of the vacuum, and by a great deal of manipulation with a hollow instrument alongside the electrode I managed to admit some air into the outer portion of the electrode, after which it was easily removed.

It had broken about midway of the shaft of the instrument, and the broken end of the portion that remained was about 5 inches down the urethra. My experience with the action of the vacuum with the first portion of the tube led me to exercise a great deal of caution in attempting to remove the latter part that extended well down toward the bladder, and by the

introduction of an endoscope and manipulation of the mucous membranes that had been drawn into the electrode I finally succeeded in releasing them and admitting air into this portion of the electrode also. After this a large endoscope was introduced in contact with the broken portion, which fortunately fitted inside the endoscope, and a finger introduced into the rectum propelled the glass fragment forward until brought into sight, when it was removed manually. A careful examination of the two fragments disclosed the fact that the break in the instrument had been a clean one and had left no small fragments in the urethra, for which I was very thankful.

The patient apparently seemed to have no particular after-pain or complications of any sort. I have watched the case carefully up to the present time and there is no evidence of stricture or any other organic trouble resulting from this unpleasant incident. But the patient was thereafter very suspicious of any intra-urethral applications, and, in fact, would have been very foolish had he been disposed to have any other attitude toward that line of treatment.

Needless to say, I have not replaced that broken instrument; but I shall keep it to remind me of the folly of taking another man's word against one's own honest convictions. The incident has given me a wholesome fear of using any but absolutely safe instruments in the body cavities.

AN INSTANCE OF PULMONARY SYPHILIS CLOSELY SIMULATING TUBERCULOSIS

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Pulmonary syphilis is so infrequent as to be interesting for its rarity alone. There was added interest in this case because the patient had been treated for pulmonary tuberculosis for months before presenting himself to me on account of the cutaneous lesions, and the mimicry of pulmonary tuberculosis was so good as to condone the error. In fact, the patient afforded an excellent example of how valuable cutaneous and lingual lesions may be in furnishing hints as to the true nature of deeper lying affections.

History.—F. W., man, aged 37, sought advice, June 25, 1914. I had seen him nearly nine years before with an orchitis. He acquired his present infection sixteen years ago, in 1898. For seven months preceding June 25 he had had a persistent cough, especially marked in the morning and accompanied by profuse expectoration. There had also been several slight hemorrhages, and chilly sensations generally in the afternoon, followed by what the patient thought was fever. He had drenching night sweats, and always felt tired and weak on arising. There was marked loss of weight, though his appetite had continued fairly good. There were no gastro-intestinal symptoms aside from a tendency to constipation. Two careful examinations of the sputum for tubercle bacilli were negative. During the last year small gummas appeared on the body and legs, many of which ulcerated and healed, leaving characteristic syphilitic scars. There was one ulcer present on the right knee when he came in. The dorsum of the tongue was deeply fissured, and there were patches of sodden epithelium on the sides, and one small ulcer, making the whole lingual picture typically syphilitic. The voice was clear and there had not been huskiness at any time. Stripped, the patient looked emaciated. The skin was faded, muddy colored, markedly wrinkled and lacking in elasticity. There were sunken supraclavicular and infraclavicular spaces on both sides, and the scapulae were prominent. No distinct difference in the percussion note over the lungs could be detected. There was apparently an abnormally high pitched note over both upper lobes, and there was a distinct increase in the vocal fremitus and vocal resonance in these areas. It appeared as though there was an active tuberculous process in both the apices. Crepitant râles were heard anteriorly in the supraclavicular and infraclavicular regions, and posteriorly in the suprascapular and interscapular areas.

Treatment and Results.—The patient was given 0.45 gm. of neosalvarsan intravenously, and a week later he reported that after the third night his night sweats had disappeared, there was much less coughing, and he was feeling much better. The cough disappeared completely before the end of two weeks following the injection. Intramuscular injections of gray oil (mercurial oil) were begun, but, as it was necessary for him to leave the city, he was given mercury and potassium iodid by mouth, to be continued until he could return for another injection of neosalvarsan. When he did return, ten weeks later, all lesions on the tongue and external surface were healed; he was looking quite well; and all the symptoms and signs of tuberculosis were gone. He is still under treatment for syphilis.

It is difficult to specify definitely the pulmonary condition. The fact that the patient had small cutaneous gummas and a gummatous ulcer of the tongue, associated with the history of repeated hemorrhages, would lead one to believe that there must have been a miliary gummatous process with breaking down somewhere in the bronchi, or deeper, within one or both lungs. The presence of bronchovesicular breathing and râles in both apices would indicate that an infiltration in the mucous membranes, deeper within the lungs, had also occurred. The physical examination did not show evidence of a large gummatous tumor anywhere in the chest, nor were any cavities demonstrable. All the evidence would lead to the conclusion that the process was diffused in the upper parts of the lungs. It was impossible to rule out tuberculosis before treatment was begun, but negative examinations of a fairly profuse mucopurulent sputum combined with a definitely positive diagnosis of syphilis justified treating the positive disease with salvarsan and mercury, and relegating the treatment of a possible accompanying tuberculosis to a later time when the syphilis would be controlled.

I reasoned that if not all the symptoms were due to syphilis, and if the patient were fighting two diseases, one of which could be quickly subdued, he would have a better chance to fight the single disease, tuberculosis, than to fight both syphilis and tuberculosis together.

That all the signs and symptoms simulating tuberculosis should disappear soon after instituting syphilitic treatment is characteristic of syphilis as opposed to tuberculosis, which is slow in improving, even under the most favorable conditions.

A small dose, 0.45 gm., of neosalvarsan was given to avoid a Herxheimer reaction, which in this particular case might have resulted in a marked aggravation of the bronchial and alveolar symptoms. Apparently, the result was as good as could have been obtained from a maximum dose. In fact, it was a demonstration of the correctness of the idea that is now so widely accepted, that a dose of 0.45 gm. of neosalvarsan can achieve everything that a dose of 0.6 or 0.9 gm. can, and with much less danger of disagreeable or dangerous by-effects.

A history of infection is only a small factor in the differential diagnosis between pulmonary syphilis and pulmonary tuberculosis, and may not be of more importance than to put one on the right track for an investigation. Many sufferers with tuberculosis have had syphilis, and indeed the latter is often considered a factor predisposing to tuberculosis. A tuberculous family history is of great importance in the diagnosis of tuberculosis, but is not evidence against syphilis, and it might mislead the physician who has to deal with a case of pulmonary syphilis.

All writers on the subject of lung syphilis agree that the syndromes of pulmonary tuberculosis and pulmonary syphilis are so similar that a positive diagnosis of pulmonary syphilis alone is very difficult to make before the institution of treatment in the cases with recovery, or before necropsy in the fatal cases. The cough, which is one of the first symptoms, is not distinctive.

The sputum in syphilis, like the sputum of chronic bronchitis, may be of a mucopurulent character, or it may even contain elastic tissue, and may be tinged with blood. The inability to find tubercle bacilli after many searchings unfortunately does not exclude tuberculosis. Their presence clinches the diagnosis of tuberculosis, but does not rule out the possibility of syphilis existing with tuberculosis. Hemoptysis is less common in syphilis, and when it does occur, as in the case reported in this article, it is usually not severe.

Dyspnea may be as marked in syphilis as in pulmonary tuberculosis, and therefore is not of any assistance in a differential diagnosis. The temperature may run high, even as high as 106 F., for weeks, as in Roussel's case, or may be hectic.[1] It is more apt to be irregular, but may be entirely absent. Night sweats are not common in lung syphilis, but in the case which I have reported they were present and of a drenching character. Emaciation may be marked in both conditions, for syphilis of the lung is a progressive disease, as is tuberculosis, and in most instances is not discovered until late.

Investigators disagree as to whether or not the physical signs in the lungs can be interpreted with any definiteness in a supposed case of lung syphilis. The signs in the present case were those of tuberculosis, and I was at first under the impression that the patient had a double infection.

Quoting from Roussel,[1] who quotes Fowler, attention is drawn to these possible points of difference between lung syphilis and lung tuberculosis:

> First, tubercle usually affects the apex of the lung, subsequently the apex of the lower lobe. The lesion of syphilis is often about the root and central portion of the lung, and follows no definite line of march. Second, both tubercle and gumma may undergo either necrosis and caseation or fibrous transformation, but with caseous tubercle the tendency toward softening and cavity is the rule, whereas a caseous gumma rarely breaks down. Third, cavities are common in tuberculosis and rare in syphilis, excepting secondary to stenosis of the main bronchi. Fourth, stenosis of the trachea and main bronchi is common in the advanced stages of syphilis, rare in tuberculosis. Fifth, cavities in pulmonary syphilis are generally but not invariably bronchiectatic, and in tuberculosis they are due to destruction of the lung tissue. Sixth, the tendency to the formation of pulmonary aneurysms, which is so marked a feature in tuberculosis, is rarely observed in pulmonary syphilis. Seventh, pulmonary lesions in tuberculosis are very common, whereas in syphilis they are extremely rare.

There are certain positive helps which may aid greatly in the diagnosis. Positive evidence of syphilis, as demonstrated by a positive Wassermann test, or, as in the present case, by active syphilis elsewhere, is sufficient to warrant treating the patient immediately for syphilis. The excellent effect of salvarsan on the mucous membranes makes it our most valuable primary remedy. And this followed by mercury and iodids may produce a quick symptomatic cure.

In any case of chronic pulmonary disease with absence of tubercle bacilli and lacking the various reactions from tuberculin, but presenting symptoms or a history of syphilis, antiluetic treatment is justifiable even if only as a diagnostic measure.

As to the frequency or rareness of pulmonary syphilis of the acquired form as opposed to the congenital form, which is not uncommon, Stengel[2] suggests that the difference of opinion depends on the point of view of the observer, whether he is a clinician or a pathologist, the former believing the condition to be fairly common, the latter that it is very unusual.

Roussel mentions the following groups of cases: that of Carlier in 1882, consisting of 75, with 50 necropsies; that of Hiller in 1884, consisting of 87, 84 of these with necropsies (20 of which had been previously reported by Carlier); that of Connor, consisting of 129 cases of syphilitic stenosis of the bronchi, with reports of necropsies in 56, in 10 of which there were lesions believed to be characteristic of syphilis of the lungs; and lastly, that of Fowler, consisting of 12 specimens found in the museums of London hospitals and the Royal College of Surgeons, which illustrate syphilitic lesions of the lungs of the acquired type.

The number of necropsies in these groups is striking and indicates how malignant pulmonary syphilis is. The improved methods in diagnosis of syphilis, and the present effective mode of treatment by the combined arsenical and mercurial medication should make future statistics more complete with a smaller percentage of fatalities.

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1. Roussel, A. E.: Pulmonary Syphilis, New York Med. Jour., Sept. 27, 1913, p. 500.

2. Stengel: Univ. Penn. Med. Bull., 1903-1904, quoted by Clayton, T. A.: Syphilis of the Lung, Am. Jour. Med. Sc., April, 1905.

Accidents in the Coke Industry.—An investigation by the Bureau of Mines for the year 1913 covering 227 plants in the coke industry of the United States, employing 24,345 men, shows that 46 men were killed, 342 seriously injured and 2,172 slightly injured. This report covers practically one-half the operators and 80 per cent. of the ovens, and the figures are representative of the whole industry. Of the 46 deaths, 20, or 43 per cent., were due to accidents in connection with haulage or transportation systems; 6 were due to coke-drawing machines, representing 13 per cent., and 11 per cent. were due to electricity. As much of the transportation in the coke industry is electrical, a portion of this 11 per cent. of fatalities from electricity would also come under the head of transportation. Twenty-six per cent. of the serious accidents were also due to haulage systems, and 8 per cent. of slight injuries. As the report states, these accidents should be largely preventable and greater precautions should be taken to safeguard employees. In addition to the six fatalities due to the process of making coke, 23 per cent. of serious injuries were due to falls, 12 per cent. of slight injuries to falls, 14 per cent. to hand tools and 16 per cent. to burns. The accidents in this industry compare favorably with those in quarries and metal mine surface injuries.

Special Article

PRACTICAL PHARMACOLOGY*

(Continued from page 246)

III

A. STIMULANTS: 2. MEDULLARY—ATROPIN GROUP

Atropin is much the most important member of this group, which includes scopolamin and homatropin and the crude drugs, belladonna, hyoscyamus and stramonium, together with their preparations. The alkaloids of this group are commonly called the mydriatic alkaloids, because dilatation of the pupil is the most characteristic action which they possess in common. While they exhibit individual differences in their actions, they form a fairly well-defined group.

The action of atropin will be discussed in some detail, and the special uses of others will be mentioned, but in the main it is to be understood that the several drugs are used for the same purposes, with the exception of scopolamin. This drug occupies a special field of usefulness because of the fact that while it resembles the other members in a general way, its stimulant action on the central nervous system is so much less pronounced than theirs, while the depression it produces is so much more prominent, that it is used to produce depression, while atropin is used to cause stimulation. This illustrates the difficulty of classifying drugs satisfactorily.

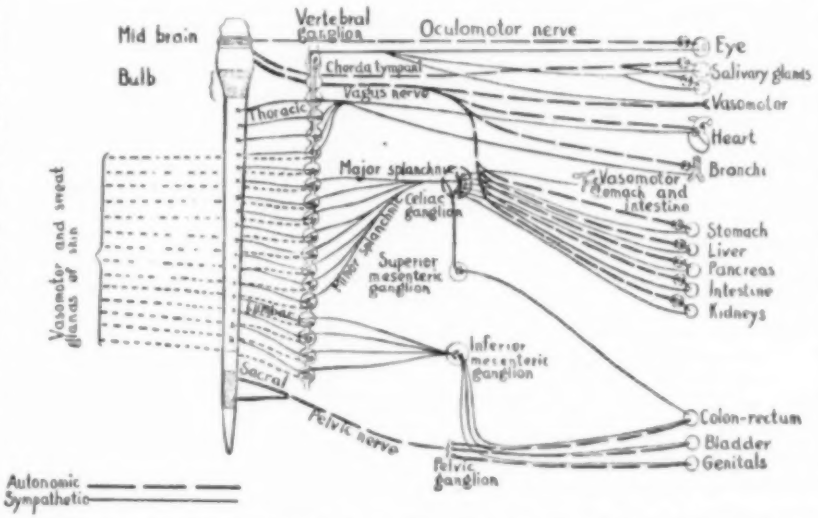

Diagram of the anatomic relations of the autonomic and sympathetic systems (from Meyer and Gottlieb, Experimentelle Pharmakologie, 1911, p. 128).

In practically all cases the actions of alkaloids are so nearly like those of their salts that they are discussed together. It is understood that the salts contain a small amount of acid, which is negligible so far as the pharmacologic actions of the alkaloids are concerned, but for which allowance must sometimes be made in calculating the dose. The principal reason for using salts of the alkaloids is that the salts are more soluble than the alkaloids themselves.

The chemical investigation of the drugs which yield the mydriatic alkaloids presents many difficulties, and some confusion has resulted from the application of the same name to different substances, and of different names to the same substance in slightly different degrees of purity. It is recognized at present that the substance first described as hyoscin was nothing but an impure form of the alkaloid which in pure form was first described correctly under the name of "scopolamin;" hence the two terms are purely synonymous, and only the name "scopolamin" should be used.

Therapeutic doses of atropin exert a greater action on the medulla than on the brain, but with toxic doses the effects on the cerebrum become more pronounced.

Atropin stimulates the respiratory center in the medulla, causing a marked increase in the amount of air breathed in a given period of time. Poisonous doses cause depression of the respiratory and other centers. This action on the respiratory center is of great importance, atropin being one of the most active of the respiratory stimulants which we have.

The vasomotor centers are stimulated by moderate doses of atropin, which cause a scarlet appearance of the face and upper part of the body, due to a dilatation of the vessels of those regions simultaneously with a constriction of the vessels of the splanchnic region. There may be merely a redness of the skin, or there may be a rash, followed by desquamation, but usually the rash disappears within a short time.

The vasoconstriction tends to raise the blood-pressure, but the effects of atropin on the circulation are complex and the height of the blood-pressure with small doses depends on the heart-rate rather than on any vasoconstriction.

The vagus center is stimulated somewhat with the respiratory and vasomotor centers, but this is soon overshadowed by the depression or paralysis of the vagus endings in the heart, which is one of the characteristic actions of all of the mydriatic alkaloids.

The vomiting center in the medulla is not stimulated with moderate amounts, and the action is not usually pronounced even with toxic doses, probably because of the simultaneous narcotic effect. Very small doses, 0.2 mg. ($\frac{1}{300}$ grain) tend to allay nausea.

The actions on the brain cannot be described in detail, and it need only be said that larger doses cause stimulation of certain areas, resulting in increased coordinated movements, talkativeness, excitement and delirium, followed by depression and coma. Atropin in moderate doses does not affect the psychic areas so much as caffein does. It is not used therapeutically for its actions on the brain.

Atropin depresses or paralyzes the endings of the parasympathetic[1] nerve throughout the body, including the oculomotor, chorda tympani, vagus and erigens, and also the sympathetic endings in the

* This is the third of a series of articles on useful drugs—on practical pharmacology for the general practitioner. As soon as completed, these articles, elaborated by additional subjects, will be published in book form.

1. Reference to Figure 1, taken from Myer and Gottlieb's Pharmacology, Ed. 2, will show the relationship between the sympathetic and parasympathetic nerves. Epinephrin stimulates the myoneural junctions of all of the sympathetic nerves (except those to the vessels and sweat-glands of the skin), while it leaves those of the parasympathetic unaffected. Atropin, on the other hand, paralyzes the endings of those nerves which epinephrin does not affect while it has no influence on those which epinephrin stimulates. Many other drugs show similar selective actions with reference to these nerves.

sweat-glands in the skin. It will be observed that the sympathetic endings in the sweat-glands behave toward several drugs like the parasympathetic endings (Fig. 1).

A discussion of the peripheral actions of atropin is largely a discussion of the functions of the parasympathetic nerves, for atropin simply abolishes those functions, but it acts on these endings in different parts of the body with varying degrees of intensity. Hence a given dose does not have the same relative effect on all organs which the nerves supply.

Atropin can be brought into contact with the oculomotor endings by dropping a solution into the eye, without inducing its systemic actions, but its actions on other parasympathetic endings cannot be elicited so conveniently.

Depression of the oculomotor endings causes dilatation of the pupil through the unopposed actions of the radiating fibers, and it also causes paralysis of the muscle of accommodation. These actions are prolonged after repeated applications, or after the use of strong solutions, and it may be a week or more before the eye becomes quite normal.

The action of homatropin on the pupil is qualitatively like that of atropin, but the effect is not so lasting. Homatropin is often preferred when an examination of the eye is to be made, but it is not so dependable as atropin, which many oculists continue to use even for the examination of the eye. Dilatation becomes maximal in a period usually varying from half an hour to an hour. Scopolamin acts as a mydriatic in the same way as atropin.

The actions of atropin on the pupil and on accommodation may be counteracted with physostigmin, but this renders the muscles of accommodation hyperexcitable, so that efforts at accommodation result in spasm of the muscles, and reading is attended with discomfort.

Paralysis of the chorda tympani endings interferes with the secretion of the salivary glands, rendering the mouth and throat dry, the voice hoarse, and swallowing difficult. The mucous glands in the nose and respiratory passages and the gastric, pancreatic and biliary secretions, and possibly the secretion of milk, are also inhibited by atropin. The action on the sympathetic endings in the sweat-glands causes the skin to become dry, these being the only sympathetic endings which behave toward a number of drugs like the parasympathetic.

The paralysis of the vagus endings in the heart causes the heart to beat more rapidly; in the stomach and intestine it overcomes the motor influence of the vagus.

The lower part of the colon, the rectum and the uterus are innervated by the erigens, the endings of which atropin paralyzes. The intestinal effects will be discussed in connection with the evacuants.

Depression of the vagus endings in the bronchi result in muscular relaxation, when the muscles are spasmodically contracted in asthma.

Atropin depresses the sensory endings in the skin with which it may be brought into contact in the form of an oleate, or of an ointment of belladonna extract.

Atropin and the other mydriatic alkaloids are absorbed promptly from the gastro-intestinal tract and from the subcutaneous tissues. Some absorption occurs even from the unbroken skin when suitable application is made; at least the drug may reach the sensory endings in sufficient amount to cause analgesia.

The mydriatic alkaloids are excreted in the urine for the greater part, and scopolamin is said to be excreted in human milk to a slight extent.

The fatal dose of atropin is supposed to be about 125 mg. (2 grains), but much smaller amounts give rise to unpleasant and even alarming symptoms of poisoning. These symptoms may be enumerated somewhat in the order of their occurrence with increasing doses as follows: Even the larger therapeutic doses induce redness, or rash of the skin, which results in desquamation; the skin, as well as the nose, mouth, throat and bronchi become dry; the voice becomes hoarse, swallowing difficult; the heart becomes rapid with rise of blood-pressure, and some motor unrest. Talkativeness, and dilatation of the pupils from systemic action occur only with very large doses; these symptoms may be succeeded by coma and respiratory failure ending in death, or there may be convulsions; nausea and vomiting are reported as common symptoms, and these must be of central origin. Small doses of atropin, however, prevent nausea when given with morphin, and even the largest doses of atropin do not cause vomiting after intravenous injections in dogs.

Poisoning by atropin may occur through the accidental taking of a solution intended for external use, or the use of strong solutions in the eye. Belladonna berries are attractive in appearance and are not infrequently eaten by children. Fortunately, they are indigestible and may result in vomiting before a fatal dose has been absorbed.

The symptoms of poisoning by atropin or one of the members of the group are usually so typical as to direct attention to the cause, but where the earlier symptoms are obscure, suspected poisoning may be confirmed by testing the urine for atropin. For this purpose a few drops of the urine are dropped into the eye of a cat; if atropin or any other of the mydriatic alkaloids is present the pupil will dilate widely within about half an hour. The test should be made within thirty-six hours after the poison has been swallowed.

In case of poisoning by the berries, or when one suspects that a poisonous dose of one of these alkaloids remains in the stomach, recourse should be had at once to the stomach-tube. Tannin or potassium permanganate may be added to the water used in washing the stomach, but the use of alkaloidal precipitants or of potassium permanganate does not obviate the necessity of emptying the stomach, for the precipitated alkaloid would be absorbed, though more slowly than the soluble salt, and one cannot be certain that the potassium permanganate has been brought into contact with all of the alkaloid. Excretion should be hastened through the use of diuretics, hot water and tea, and in urgent cases the intravenous injection of normal salt solution under suitable precautions would be justified.

Excessive doses of atropin or the other mydriatic alkaloids may prove fatal in a short time, but such amounts are seldom taken, and the physician is more frequently called on to treat the alarming symptoms which yield to treatment.

Pilocarpin stimulates the salivary and mucous glands, and relieves the dryness of the mouth and throat; morphin is useful only in the early stages of

poisoning by atropin, not at all in scopolamin poisoning, in which it is directly contra-indicated.

If depression has already begun in atropin poisoning, or if the dose taken was sufficient to lead one to expect severe depression later, morphin is contra-indicated, or at most small doses should be used in the stage of excitement. Application of cold water or of the ice-bag to the head is useful during delirium. Respiratory failure demands artificial respiration, and in such cases vigorous means should be adopted to secure rapid elimination by intravenous injections of normal salt solution.

THERAPEUTIC USES

Atropin is useful as a respiratory stimulant in various conditions. It is often recommended in the treatment of morphin poisoning, but authorities differ widely in their views concerning the wisdom of this measure, and to a greater extent in regard to the dose which should be employed in any event. Atropin and morphin in small doses are antagonistic in their actions on the respiratory center, but they are synergistic in large doses, both causing depression. The difference in opinion results from the question whether atropin is capable of causing stimulation without subsequent depression, and if this be possible, the next question concerns the amount which can be given without causing severe depression.

It seems probable that moderate doses of atropin are useful in combating the action of a poisonous dose of morphin on the respiratory center, because there seems to be little danger of serious depression from such doses of atropin. The amount which can be given in such cases can hardly be stated in exact figures. If used for this purpose, it is best given in doses of about 1 mg. ($\frac{1}{60}$ grain). This is repeated every hour until three doses are given if each of the first two doses is followed by improvement in the respiration. This probably represents the maximum that can be given with safety, within a period of six hours. Caffein is safer than atropin and probably deserves the preference in all cases in which respiratory stimulation is required.

Atropin probably deserves to be used more frequently than it is in shock, because it is capable of increasing the heart-rate, when this is unduly slow, and this, with the action on the vasomotor centers, tends to increase the blood-pressure, and the stimulation of the respiratory center should further improve the condition. It would appear to be useful in respiratory and circulatory failure during anesthesia, for, according to Hewitt, cardiac failure during anesthesia is frequently secondary to interference with respiration.

Its use before the administration of chloroform will prevent the dangerous inhibition of the heart which sometimes occurs early in the course of the administration, before the heart is seriously injured by the direct action of the chloroform.

The therapeutic use of atropin as a mydriatic has been indicated in discussing its action on the pupil. It appears to be more certain than homatropin in causing complete paralysis of accommodation, but the latter is preferable as a mydriatic when there is reason to fear glaucoma, because it does not increase the intra-ocular tension so much as atropin. The prolonged action of atropin is preferred in iritis to prevent adhesions and to break up those already formed.

Excessive salivation, sweating from various causes, such as the use of large doses of the antipyretics, and the night sweats of phthisis may be controlled by very small doses of atropin. The application of ointment of atropin or belladonna does not appear to relieve local sweating. Its continued local application to the breast diminishes the flow of milk.

Atropin is used to increase the heart-rate, especially where this is abnormally slow (bradycardia) owing to overactivity of the vagus, but it has much less influence on the rate when this is due to cardiac disease, and when slow rhythm is due to heart-block atropin will not influence the rate. Certain forms of cardiac irregularities due to vagus control are abolished by atropin. Its action on the vagus is much less effective at the extremes of life because the vagus itself has less control over the heart-rate in the young and the aged than during the remainder of life.

Bronchial asthma resulting from spasm of the muscles is often relieved by atropin or one of the crude drugs of this group.

Atropin abolishes spasmodic contraction of the pylorus, and is useful in the treatment of lead colic in which spasm of the muscles of the intestine occurs, and in the same way it is useful in spasm of the muscles of the ureter and of the bile-ducts due to the irritation of calculi.

Atropin is useful in relieving certain neuralgias for which it is commonly applied locally.

Belladonna is used in whooping-cough, in which Cushny suggests that it may allay the excitability of the respiratory center.

Atropin is the physiologic antagonist of those poisons which exert their actions through stimulation of the parasympathetic (vagus, oculomotor, chorda, erigens) nerves, such as physostigmin, pilocarpin and muscarin, but it is not feasible to discuss in detail its actions in antagonizing these poisons. It has been found that animals survive a larger dose of aconitin if atropin be administered than without it. The cardiac effect of aconitin is attributable to vagus influence in part.

Drugs of the atropin group have long enjoyed a special reputation in the treatment of nocturnal enuresis in children, but there is no doubt that they have been used with little discrimination in many cases. Unfortunately, the causes of this condition are not sufficiently understood to enable one to say just when atropin will be useful. Under the circumstances it may be tried when hygienic measures have proved unavailing, but it should not be employed for any considerable period when it does not prove unmistakably useful.

There is no reason to suppose that all cases of nocturnal enuresis arise from the same cause, or that they can be relieved by the same treatment; but it is probable that when it results from an abnormally active reflex operating through the parasympathetic nerve to the bladder, atropin, or one of the other members of the group, may afford relief.

Occasional wetting of the bed by children probably results in some cases from delayed absorption of fluids from the alimentary canal and increased secretion of urine at such time as the sweat-glands of the skin are less active than usual. Atropin would probably aggravate the trouble in such cases.

The recommendation of drugs with such diverse actions as ergot, cantharides, buchu, rhus aromatica, strychnin and arsenic by a prominent writer serves to

indicate the vagueness of our knowledge of this condition.

Hyoscyamus is sometimes preferred, probably acting better than belladonna in those cases in which nervousness plays an important rôle.

If belladonna or other drug of this group is used it is preferable to employ fairly large doses at once and abandon it if it does not afford prompt relief.

Hyoscyamus is generally reputed to be more useful than belladonna and stramonium as a sedative to the nervous system; stramonium is little used except as an ingredient of asthma powders, used for smoking.

Scopolamin hydrobromid has a special field of usefulness in quieting the excitement of the insane and producing sleep. It is more effective when given at night than during the day.

Some ophthalmologists prefer it to atropin as a mydriatic, because it is said to be less irritating and to produce a brief but complete dilatation of the pupil with paralysis of accommodation.

Its use with morphin in producing narcosis will be discussed after morphin has been considered.

Extract of belladonna is sometimes applied to the skin in the form of an ointment for the relief of neuralgic pain and for acute inflammatory conditions; the commercial belladonna plaster is widely used by the laity, but it is doubtful whether the belladonna contributes anything to the effect.

It is probable that all of the crude drugs and galenical preparations of this group are superfluous, and that with a better knowledge of the actions of atropin and scopolamin these alkaloids will replace the crude drugs and their galenical preparations as completely as quinin has displaced cinchona and its galenicals.

DOSAGE

The average dose of atropin sulphate is stated to be 0.4 mg. (1/150 grain), but there are many conditions for which this dose would be insufficient and others for which it would be too large.

The dose should be carefully graduated for the specific purpose for which the drug is intended, as one can then accomplish the desired effect with a minimum of side actions.

The smallest therapeutic doses of atropin commonly used are probably those which are added to the laxatives. The official compound laxative pill contains 8 mg. (1/8 grain) of extract of belladonna, or approximately 1/10 mg. (1/650 grain) of atropin. The largest doses commonly used internally are employed for relieving spasm of the intestinal muscle, in which case as much as 3 mg. (1/20 grain) may be needed.

To lessen sweating the dose is 1/4 mg. (1/250 grain); to paralyze the vagus endings in the heart, 1 mg. (1/60 grain); to antagonize morphin poisoning, 1 to 3 mg. (1/60 to 1/20 grain); but, as previously stated, there is considerable diversity of opinion concerning the advisability of the larger dose given here; to antagonize other poisons, such as aconite, pilocarpin, and other drugs which stimulate the autonomic nerves, the dose required will depend on the action elicited by the poison; since aconite stimulates the vagus, this should be paralyzed by atropin, and about 1 to 1.5 mg. (1/60 to 1/40 grain) should be used. Pilocarpin induces excessive secretion of the bronchial and salivary glands, the excessive bronchial secretion constituting a danger with overdoses of pilocarpin, and to antagonize this, 0.5 mg. (1/125 grain) atropin should be used.

Atropin is more effective in antagonizing pilocarpin than is pilocarpin in antagonizing atropin. Some persons appear to be remarkably susceptible to the action of atropin in inducing skin rashes. Dryness of the throat is commonly induced by doses of 1 mg. (1/60 grain) or over.

A dose of 0.2 mg. (1/300 grain) is said to stop the vomiting which small doses of morphin cause in susceptible persons.

Asthma resulting from spasm of the bronchial muscle, whatever the exciting cause, may be relieved by atropin in doses of 0.25 to 0.5 mg. (1/250 to 1/125 grain), repeated several times daily if necessary.

Belladonna and other members of the group are used in the form of cigarets for the relief of asthma. It is stated that the smoke of 4 gm. (60 grains) of stramonium in the form of a cigaret contains 0.4 mg. (1/150 grain) atropin.

Children bear atropin fairly well, and relatively large doses are frequently recommended in the treatment of whooping-cough, and such large doses are required if the depression of the respiratory center is the object to be attained.

As little as 1 drop of a 1:1,000 solution of atropin dropped into the eye will cause dilatation of the pupil, but stronger solutions are required to paralyze the muscles of accommodation, and 1 per cent. solutions are commonly employed for this purpose.

The average dose of scopolamin hydrobromid is 0.5 mg. (1/125 grain); much larger doses are sometimes required for quieting the insane, but even here caution must be shown for it may cause depression of respiration and a rapid fall in the blood-pressure, resulting in collapse.

For use as a mydriatic alone solutions of from 1:500 to 1:1,000 suffice, but where paralysis of accommodation is required, somewhat stronger solutions are necessary (from 1:100 to 1:250).

The average doses of the galenical preparations of the drugs of this group will be given in the discussion of the materia medica.

MATERIA MEDICA *

English authorities advise doses of the drugs of this group which we are accustomed to consider enormous; for example, Leonard Guthrie states that in the treatment of habitual nocturnal enuresis tincture of belladonna should be pushed to full doses, that is, to from 10 to 40 minims for a child of 10 to 12 years. The British tincture of belladonna is required to contain from 0.048 to 0.052 per cent. of alkaloid, or about 50 per cent. more than is required by the U. S. P.

Such doses may prove beneficial in cases of habitual nocturnal enuresis when the treatment in vogue in this country would fail, but such heroic treatment will certainly result in dryness of the throat, rashes and other disagreeable side actions and should not be used except in persistent cases when milder treatment has failed.

One will find formulas prescribing the drugs of this group in text-books which do not take into account the fact that the alkaloids of this group are prone to undergo changes and that we cannot foretell what changes will take place when one of the galenical preparations is mixed with alkaline salts and allowed to stand. A prescription of this nature

* Owing to lack of space the materia medica of atropin, scopolamin, homatropin, belladonna, hyoscyamus and stramonium has been largely omitted. It will be included when this series is published in book form.

found in a standard work on therapeutics includes tincture of belladonna, potassium iodid, ammonium carbonate, potassium bicarbonate, camphor water and water.

Any tincture of this group is prescribed preferably alone except that it should be diluted (and flavored, if desired) so that the dose may be measured conveniently. The following illustrates the method of prescribing tincture of belladonna:

		c.c.	
℞	Tincturae belladonnae.....	4	fl 3i
	Syrupi aurantii.....	15	fl 3iv
	Elixiris aromatici....q. s. ad	30	fl 3i

M. Dose: a teaspoonful.

The smoke of burning belladonna and stramonium leaves has been widely used by inhalation for the relief of asthma. The leaves are ground or granulated in order to prevent their burning with a flame, and a little potassium nitrate is commonly added to secure more uniform combustion. The mixture is burned on a plate, smoked in a clean pipe, or used in the form of cigarets.

W. J. Hadley advised the use of a mixture of equal parts of belladonna, hyoscyamus, and stramonium leaves and potassium nitrate as a fumigation, but there is no advantage in using a mixture of drugs containing such similar constituents, and any one of the leaves may be used with the addition of from one-eighth to one-fourth its weight of potassium nitrate. Half a teaspoonful of the mixture is used at each fumigation.

(*To be continued*)

Therapeutics

PREVENTION IS GREATER THAN CURE

(*Continued from page 247*)

XVI

INFLUENZA: GRIP

Since the last epidemic of this disease in the United States in the winter of 1889 and 1890, there has been no year without the disease occurring in many parts of the country. In some regions it is present for months, sometimes occurring in small epidemics, at other times in isolated instances. Were the air-passage secretions to be examined in every case of cold and bronchitis, the influenza bacillus of Pfeiffer, discovered by him in 1892, would frequently be found.

While the well-known acute epidemic types of this disease probably always show this bacillus, it is not always discovered in instances that seem similar and are well termed grip or influenza, as distinct from an ordinary cold or bronchitis. Whether another distinct germ causes an inflammation of the air passages simulating influenza (that is, a closely related germ), or whether it is the same germ that has become so attenuated and changed that it is not recognized, has not been determined. To all intents and purposes, clinically and practically, these isolated cases without the true Pfeiffer bacillus should be considered as serious as though that germ were present and should be treated the same, as all of these cases seem readily to develop pneumonic conditions.

The toxin produced or elaborated by the influenza bacillus seems to be a vasomotor depressant, and perhaps acts through the sympathetic system. The small blood-vessels all over the body seem to dilate and produce capillary congestion, especially of the mucous membranes, the most frequent result being a coryza, a pharyngitis, a laryngitis or a tracheitis. The congestion in the larynx causes the harsh, dry, metallic cough which is quite characteristic of this type of influenza. The congestion and swelling of the mucous membrane of the trachea causes a peculiar oppressed feeling, with more or less pain, referred to the upper part of the sternum. The great amount of sneezing which occurs with a typical attack, almost similar to hay-fever, is due to congestion of the mucous membrane of the nostrils. The conjunctivae may also be injected, causing pain in the eyeballs and often a serous conjunctivitis, another typical symptom of influenza. In some seasons there seems to be a special tendency to middle-ear inflammations. At other times there frequently occurs a congested drum, with sometimes a hemorrhagic bleb or vesicle on the drum, a very painful though easily remedied condition.

The almost constantly present lumbar backache at the onset of this disease is probably due to congestion of the kidneys, and albumin is frequently found in the urine of such patients, and occasionally blood-corpuscles. A menorrhagia or a metrorrhagia may occur from the same tendency to dilatation of the blood-vessels. There may even be nosebleed, and occasionally a slight hemoptysis without any other assignable cause and without any subsequent development of tuberculosis or any other disease. With this disease, although the fever may be high, the skin is likely to be moist, and there may be profuse perspiration. The pulse may be slower than we normally expect from the height of the fever, and the blood-pressure is generally lowered; all of these conditions are due to the tendency of the blood-vessels to dilate. This dilatation of the vessels on the surface of the body, with the increased radiation and evaporation, causes the beginning high temperature of typical influenza to be short-lived, although for some days the temperature may rise regularly every afternoon and evening to a gradually decreasing degree.

The heart is generally weak from start to finish in this disease, and even collapse turns can occur. Also, during the first year of the last epidemic many persons were shocked by the disease and collapsed, having no fever and showing no symptoms except a weakened heart and circulation. This is the typical nervous type of the disease. The disease may also cause cerebral symptoms without many catarrhal symptoms, and sleeplessness, irritability and headache are very constant symptoms in all forms of grip; even meningitis can occur from this germ.

Rather an infrequent type of the disease is the bowel type; this can occur without respiratory catarrhal symptoms. Patients so affected have diarrhea, with more or less intestinal irritation, apparently the greatest amount of dilatation of blood-vessels in these cases occurring in the mucous membrane of the intestinal tract. These various types, the catarrhal, the nervous and the abdominal, may be interwoven, and a patient may show symptoms of all three.

The future of every case of influenza is prostration, nervous and muscular debility, with more or less circulatory weakness; in other words, there is exhaustion. The patient's resisting power is reduced, and any

defect or diseased condition that he may have is aggravated by an intoxication with this germ.

If no complications occur, the convalescent patient should rest as much as possible, should not be subjected to exposure and should be given tonics, and, if necessary to cause restful sleep, for a short period at least, some hypnotic or some physical method of causing sleep. The most frequent complication is pneumonia, and the type of pneumonia that the influenza germ seems to cause most frequently is the lobular or bronchial pneumonic type; pneumonic congested areas may be found in different parts of one or both lungs. Not infrequently, however, true lobar pneumonia occurs.

The next most frequent complication, as suggested above, is middle-ear catarrh. The various sinuses in the region of the nostrils may become affected; all types of indigestion may occur, and not only sleeplessness and meningismus, but also a very serious meningitis, and even insanity can be caused by these germs and their toxins. Mental depression is a common occurrence, following severe attacks of grip. Pericarditis and endocarditis occur as complications of influenza.

It is thus seen that this disease should always be taken seriously, and every possible means used to prevent contagion, as it is one of the most highly contagious diseases. It spreads with great rapidity, but only by contact, although it may doubtless be transmitted by infected clothing, and perhaps even by letters, as when the last epidemic first reached America, the first persons affected in many cities were post-office clerks.

While no season is exempt from this disease, it occurs most frequently in colder weather, and in the colder climates, and in moist climates. Perhaps the more sunshine, the less frequent the disease. While one attack may protect a person for that season, he seems more susceptible to subsequent attacks in following years. There are doubtless many carriers of this disease who may have a persistent and continued subacute or chronic catarrhal infection and very likely are distributers of the disease to others. When one case occurs in a household, other members of the family become readily infected. The same is true in schools and in stores or buildings in which an infected person is closely associated with others. Many an office with one employee affected will soon, on investigation, show every other employee to be more or less seriously affected. While almost all persons are susceptible to this disease, a few seem to be immune. It is the most frequent of all definite infectious diseases.

Treatment

It having been determined or suspected that a patient has influenza, it is much more important that he remain in bed, or at least in the house, than if he has an ordinary acute cold. Also, it is more essential that he be more or less isolated or that measures be taken that he does not spread the disease by spraying from coughing or sneezing, and that he does not use the same towels, napkins, drinking-cups and eating utensils as other members of his family. The patient should be prohibited from fondling and kissing children. If the patient is a young child in close contact with the mother or nurse, all possible precautions to prevent contagion should be taken.

In a word, each family should be taught that grip is an infection, that it is contagious, that it spreads rapidly, that it may have serious complications and that it frequently leads to pneumonia, which has become in many regions of this country the most frequent cause of death. Therefore, even an apparently mild case of grip or influenza should be treated actively and energetically. As previously stated, whether a schoolchild begins with an acute cold or an influenza, he should be sent home and remain there until he is well, or at least almost well.

As a grip patient is liable to have a chill, or at least feel chilly or have cold sensations up and down the back, anything that makes him warm improves his condition. He may be given hot malted milk, hot tea or hot lemonade, at more or less frequent intervals, until his chilliness has ceased. The patient may be given a hot tub bath and then put into a warm bed in a warm room as an efficient means of making him comfortable and relieving his internal congestions. Hot water bags at the feet and extra coverings to the bed are often needed. A quickly acting stimulant is aromatic spirits of ammonia, given in half teaspoonful doses in hot water or hot lemonade, at intervals of three hours, for three or four times. The various methods suggested for aborting an acute cold may be used in this disease. Much greater care must be exercised, however, if the patient has the influenzal infection than if he has a simple cold, as to when he can return to his work or occupation, or be subjected to exposure to cold or dust, either in a house, building or outdoors.

As soon as the patient feels warm, the temperature may rise quite high, associated with severe headache, backache and irregular pains in other parts of the body. At this time a drug such as acetanilid, antipyrin, acetphenetidinum, or acetylsalicylic acid will be of benefit, provided that the patient is not ambulatory, and that he is not to be subjected to exposure. With this depressing infection such treatment is not wise unless a patient is in bed, or at least remains in the house.

The proper dosage of these drugs has already been suggested, and no one of them should be long continued. The most depressant is undoubtedly acetanilid, and perhaps the least depressant is acetphenetidinum. Should depression occur after one of these drugs has been administered or from the disease, circulatory stimulants such as aromatic ammonia, camphor or caffein should be given and the patient surrounded with dry heat. A hypodermatic injection of strychnin sulphate, 1/30 grain, may be given to stimulate the nerve centers. Cyanosis has not infrequently been caused by acetanilid, but an amount of this drug large enough to cause such a condition should never be given. The following prescription may be suggested:

		Gm.	
℞	Acetanilidi	0.50	gr. viiss
	Sodii bicarbonatis.....	1.0	gr. xv

M. et fac chartulas 10.

Sig.: One powder, with water, every two hours, except when the patient is sleeping.

Or:

		Gm.	
℞	Acetphenetidini	1.50	
	Phenylis salicylatis.....	1.50	āā gr. xxv

M. et fac chartulas 5.

Sig.: One powder every three hours.

It should be remembered, as previously noted, that it has been shown that an alkali like sodium bicar-

bonate inhibits the undesired action of coal-tar drugs on the heart; also, that caffein does not protect a heart from undesirable activities of the coal-tar drugs; in fact, it has been shown to intensify such activity.

In making a diagnosis of the infection present it is well to remember that any of these drugs, and also salicylic acid in any form, may cause eruptions on the skin, either erythematous or urticarial.

But little food is needed during the first twenty-four hours of grip, and it should not be pushed even on the second day, if food is repugnant to the patient. He should have plenty of water and such simple liquid nourishment as he desires. As soon as the appetite returns, food should be pushed. The various catarrhal conditions should be treated as suggested under coryza, pharyngitis and bronchitis. Also, while the patient is kept warm, he should have good fresh air in his room. This is essential with all infections, and especially with infections of the nose, throat and lungs. The bowels should be treated as indications call for. Simple laxatives may be given, if needed, or the soothing bismuth subcarbonate, if there is intestinal inflammation. Phenyl salicylate (salol) may be given, if there is much fermentation in the bowels, or the Bulgarian form of lactic acid bacilli may be given for a few days.

As soon as the patient begins to convalesce, he should be given tonics, and if there is no inflammation in the ears, quinin is valuable. Some form of iron should generally be given, and possibly a bitter tonic before meals. If the patient is not nervous, a small dose of strychnin three times a day is good treatment. On the other hand, it should be urged that strychnin stimulation is overdone, and a patient who cannot sleep should not be given strychnin or quinin later than the noon meal. Sometimes the sleeplessness following influenza is benefited by the administration of one-half to one teaspoonful of good fluidextract of ergot, taken an hour before bedtime. These patients should never be allowed tea or coffee after the noon meal, as they are very susceptible to cerebral stimulation by caffein and are likely to remain awake for hours from such stimulation. All disturbances or diseased conditions left over by grip must be treated energetically, else they tend to be prolonged. There are few germs that seem to be so tenacious and persistent, at least in their unpleasant results, as is the influenza bacillus. All persons are susceptible to serious consequences from influenza.

A schoolchild's desk, pencils, etc., and immediate surroundings should be thoroughly cleaned after the child has been sent home with an acute cold of any kind. This is especially necessary in cases of influenzal infection.

(To be continued)

Antituberculosis Expenditures in 1914.—On the authority of the National Association for the Study and Prevention of Tuberculosis it is asserted that $20,500,000 were spent in 1914 in the campaign against tuberculosis. Of this, 68.8 per cent. came from municipal, county and state or federal sources, which is said to indicate a most gratifying "shifting of the burden of institutional care of the consumptive from the private purse to the general public purse where it rightfully belongs." Five years ago the proportion contributed from the public sources named was only 53 per cent. The states leading in the amounts contributed were New York with $3,200,000; Illinois, $1,700,000; Pennsylvania, $1,600,000; Massachusetts, $1,200,000, and Colorado with $96,500. This is exclusive of contributions from private sources.

New and Nonofficial Remedies

THE FOLLOWING ADDITIONAL ARTICLES HAVE BEEN ACCEPTED BY THE COUNCIL ON PHARMACY AND CHEMISTRY OF THE AMERICAN MEDICAL ASSOCIATION. THEIR ACCEPTANCE HAS BEEN BASED LARGELY ON EVIDENCE SUPPLIED BY THE MANUFACTURER OR HIS AGENT AND IN PART ON INVESTIGATION MADE BY OR UNDER THE DIRECTION OF THE COUNCIL. CRITICISMS AND CORRECTIONS ARE ASKED FOR TO AID IN THE REVISION OF THE MATTER BEFORE PUBLICATION IN THE BOOK "NEW AND NONOFFICIAL REMEDIES."

THE COUNCIL DESIRES PHYSICIANS TO UNDERSTAND THAT THE ACCEPTANCE OF AN ARTICLE DOES NOT NECESSARILY MEAN A RECOMMENDATION, BUT THAT, SO FAR AS KNOWN, IT COMPLIES WITH THE RULES ADOPTED BY THE COUNCIL.

W. A. PUCKNER, SECRETARY.

LUETIN.—Luetin is an extract of the killed cultures of several strains of the *Treponema pallidum*, the causative agent of syphilis.

Actions and Uses.—When injected into the skin, luetin provokes no reaction in normal individuals except a very small erythematous area at and around the point of injection. In certain cases of syphilitic infection, a reaction occurs consisting of papules which may become pustules. When the reaction takes the papular form, a large reddish indurated papule (usually from 7 to 10 mm. in diameter) makes its appearance in twenty-four to forty-eight hours and slowly increases for four or five days, after which the inflammatory process begins to recede. The color of the papule gradually becomes dark bluish red. The induration disappears within two weeks, as a rule.

In the pustular form, after the fourth or fifth day, the inflammatory process increases in intensity and the papules become vesicular and later purulent. The pustules rupture spontaneously and the defect caused by the escape of the pustular content becomes quickly covered by a crust that falls off within a few days. A small induration sometimes remains for a few weeks or often months, leaving a small keloid after healing.

In the torpid type of syphilis the site of injection fades to an almost invisible point within three to four days, so that it may be erroneously considered a negative reaction. After ten days, or even longer, the spot suddenly begins to enlarge and goes through the same stages as seen in the pustular type.

Luetin is employed for the diagnosis of syphilis. It is of use in the examination of tertiary cases but rarely gives a positive reaction in the primary cases or in untreated secondary cases. In patients who are under treatment by mercury or salvarsan, the reaction is frequently positive even in cases which fail to give a positive Wassermann reaction.

Dosage.—The amount of luetin to be injected for one test is 0.07 Cc. The material should be properly diluted and injected into, but not under, the skin. A site should be selected on the skin in the upper arm, cleansed and sterilized and the injection made as described.

Pure cultures of several strains of the pallidum are allowed to grow for periods of six, twelve, twenty-four, and fifty days at 37 C. under anaerobic conditions. One set is cultivated in ascitic fluid containing a piece of sterile placenta, and the other in ascitic fluid agar also containing placenta. The lower portion of each solid culture in which a dense growth has occurred is cut out and the tissue removed. The agar columns which contain innumerable spirochetes are then carefully ground in a sterile mortar. The resulting thick paste is gradually diluted by adding, little by little, the fluid culture which also contains an enormous mass of the pure organisms. The dilution is continued until the emulsion becomes perfectly liquid. The preparation is next heated to 60 C. for thirty minutes in a water bath, and then 0.5 per cent. trikresol is added. When examined under the dark field microscope, numerous dead pallida per field may be seen. Cultures made from this suspension remain sterile, and with them no infection can be produced in the testicles of rabbits. The suspension is kept in a refrigerator when not in use.

Non-Proprietary Preparation:

Luetin, Mulford.—This is supplied in a glass capillary tube provided with a special needle for the intradermal test containing sufficient for a single test, and also in packages containing sufficient for five tests, and in hospital size packages sufficient for fifty tests.

Manufactured by H. K. Mulford Co., Philadelphia.

GLYCOTAURO (See N. N. R., 1914, p. 52).

The following dosage form has been accepted:

Glycotauro Capsules, (half size).—Each capsule contains glycotauro 0.15 Gm. (2½ grains).

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SATURDAY, JANUARY 23, 1915

THE NEWER EXPERIMENTAL MEDICINE EXEMPLIFIED IN THE STUDY OF NEPHRITIS

It is one of the merits of the modern experimental medicine, which has departed from exclusive attendance at the bedside in order to enter the laboratories of the physiologist, physiologic chemist, pathologist, and pharmacologist, that it is rapidly learning to imitate human disease for purposes of study. A glance at the journals of scientific medicine of the present era discloses not merely the conventional recitals of clinical statistics, of case histories and necropsy reports, but also a newer type of contributions which are concerned with the effects of definite lesions induced according to a preconceived plan, or of pathologic states of organs or perverted metabolic processes initiated at will. Experimental injuries to the pancreas in animals have made possible the imitation of many features of human diabetes; operative interference with the organs within the cranial cavity has furnished a long-desired opportunity to study hitherto obscure diseases involving the pituitary gland and the cerebrospinal system; surgical obstruction of the gastroenteric tract has duplicated the conditions of intestinal stagnation and so-called alimentary toxemia so as to reproduce symptoms of unexplained origin; intoxications with various drugs have furnished illustrations of disturbed nutrition associated both with upsets of chemical processes in the body and with the consequences of induced degenerative changes in important organs. The catalogue of these and numerous other instances of the distinctly modern method of approaching the problems of the damaged organism becomes the more impressive as one contemplates how recent such researches really are. Lee[1] has reminded us that it is scarcely more than half a century since the demonstrative teaching of Dalton, who came to the College of Physicians and Surgeons at New York in 1854, fresh from the inspiring laboratory of Claude Bernard, created much enthusiasm and inaugurated a new era for American students of medicine.

A recent American experimental contribution[2] to the understanding of nephritis, illustrative of the best type of investigation now being approached in many parts of the world by the newer paths of research medicine, may serve as an illustration of the fruitful results of the modern movement. The nature of the involvement of the kidneys and the rest of the organism in human nephritis has until lately remained nothing less than inexplicable, because with albuminuria as a constant and ever present symptom, the other factors of kidney function may be found to vary in every direction from that of hyperactivity on the one hand to that of extreme inefficiency on the other. With retention of all urinary waste products at one time, with unlike and unequal elimination of different excretory substances under other conditions, with evidence of involvement of organs other than the kidneys in still different circumstances, yet with all of these phenomena accompanied by certain similar clinical manifestations of nephritis, confusion has long reigned supreme.

Gradually, however, it has become possible experimentally to locate or reproduce any single factor at a time out of this bewildering complex of confusion. Experimental pathology has enabled us to localize a renal damage chiefly in the glomeruli or in the tubules, for example. Intoxication with salts of uranium, as is now well known, leads to the development of nephritic conditions. Uranium nephritis is generally classified as of the tubular type; but although the anatomic study of the kidneys usually does not demonstrate any pronounced involvement of the glomeruli, there is other evidence available of the existence of functional changes in the vascular glomerular apparatus which may pronouncedly modify the activity of the kidney. Mosenthal[2] has now demonstrated that it is possible to obtain illustrations of either nitrogen retention, increased nitrogen excretion, or any grade of variation between these extreme effects of the nephritis induced by uranium. Here we have the same ranges that may prevail in human cases.

With large doses of uranium, the nitrogen of the urine becomes diminished and is consequently retained. The quantity of urine may still be large, so that the retention of any urinary constituent cannot be charged to oliguria or anuria. Evidently a kidney insufficiency —an impaired power to eliminate nitrogenous compounds—is responsible for their retention in such cases. With smaller doses of the same poison the story is entirely different. Attending a distinct nephritis, as evidenced by the degree of albuminuria, there may be an unduly increased excretion of water, nitrogen, and sodium chlorid. Simultaneously sugar is present in the urine.

1. Lee, F. S.: The Relation of the Medical Sciences to Clinical Medicine, THE JOURNAL A. M. A., Dec. 12, 1914, p. 2083.

2. Mosenthal, H. O.: Nitrogen Metabolism and the Significance of the Non-Protein Nitrogen of the Blood in Experimental Uranium Nephritis, Arch. Int. Med., December, 1914, p. 844. The literature on the subject is referred to.

How are we to explain these apparently contradictory phenomena? The diminished excretion is doubtless due to kidney insufficiency; the increased elimination, on the other hand, is due not to any previous retention, which has sometimes been maintained, but to an actually augmented protein destruction. Dosage, that is, the severity of the intoxication, determines the nature of the involvement. The situation is summarized by Mosenthal as follows: The laws governing the elimination of nitrogen in the urine in nephritis are not haphazard or "bizarre," but, such other factors as food intake, normal stools, etc., being constant, depend largely on three conditions: the degree of protein catabolism, the chemical combination in which the non-protein nitrogen exists in the blood, and the permeability of the kidney.

The investigation of the feces, and particularly of the succus entericus, in some of these well-defined types of nephritis with retention, serves to dispel a widespread belief. The intestines do not supplement the functions of the kidney through vicarious excretion, simply because there is an abnormally large quantity of nitrogen to be eliminated. Each function largely follows its own laws independent, as far as possible, of its neighbor. Even when the urinary excretion is seemingly adequate, the causes of some of the symptom-complexes such as uremia may, according to Mosenthal's belief, lie in the many intermediary cycles of metabolism. In other words, nephritis may become something more than a purely renal or circulatory affair; and Mosenthal adds that human nephritis presents such a many-sided picture that it seems probable that many of the facts worked out for experimental uranium nephritis are applicable to it. The only claim that can be made for them at present, however, is that they be considered as suggestions on which to base further observations.

The frequently reported increase of non-protein nitrogen of the blood in nephritis—another bit of suggestive information acquired as the result of the newer experimental medicine—need not be due, as is so commonly believed, to the retention by an insufficient kidney. Mosenthal reminds us that we must consider further the possibility of inspissation of the blood, due to loss of water; increase of protein catabolism; and the chemical combination in which non-protein nitrogen exists in the blood. Heretofore, general attention has been paid only to the first of these.

In singling out an excellent research conducted under the auspices of the Edward N. Gibbs Prize Fund of the New York Academy of Medicine, we are not unmindful of the comparable studies in the same field of investigation reported in recent months by other workers, notably in American laboratories. Our emphasis is placed rather on an illustration of the promise of progress represented in the newer modes of attacking clinical problems.

GRADUATE MEDICAL INSTRUCTION

The article by Dr. Arnold[1] on graduate medical instruction published this week deals with one of the great present needs in medical education. The time for a careful development of graduate work in this country could never be more opportune, since physicians cannot for the present obtain such work abroad.

As stated in a recent report,[2] the objects of graduate medical instruction are: (*a*) to offer advanced instruction and opportunities for research; (*b*) to prepare physicians for special fields of work; (*c*) to offer opportunities for review and for keeping in touch with the advances in medical science, and (*d*) to make up any deficiencies in previous medical education. Courses meeting some of these purposes are offered by several of the undergraduate medical schools, although usually during the summer or at times, perhaps, when some physicians cannot well leave their practice. Graduate work is more satisfactory, however, if planned and given separately from undergraduate instruction. The physician who has developed an active practice usually realizes the lines along which he needs further instruction, and would gladly take advantage of any opportunities of perfecting himself, if he could do so without undue loss of time, in the few weeks or months he could occasionally spare. Graduate instruction is usually more convenient for the average physician, therefore, if concentrated courses in certain subjects are so arranged as to permit their completion in a comparatively short time. Again, it would doubtless be an advantage if, so far as possible, the various courses offered in any one subject could be scheduled at hours which do not conflict, so that the physician, if he desired, could profitably devote all his available time to any one specialty.

The needs and the convenience of physicians have apparently been given more careful consideration, and graduate medical instruction has reached its highest development, in those cities of Europe having single strong university medical schools and where all grades of instruction for physicians, both laboratory and clinical, are organized under a centralized control. In this country, by comparison, scarcely a beginning of an ideal scheme has been made. In many large cities no graduate work whatever is available; in a few others there are single graduate schools, but the clinical material is limited perhaps to that of a single hospital, or the work is too limited in its scope. In three or four other cities, instead of a single, strong, thoroughly well-organized graduate medical school, there are three or more separate and independent institutions. Such clinical material as is being utilized in these cities, therefore, is divided between these separate institutions, without any attempt to correlate the

1. Arnold, H. D.: The Problems of Graduate Medical Instruction, THE JOURNAL A. M. A., this issue, p. 329.

2. Report of the Council on Medical Education to the House of Delegates of the American Medical Association, June, 1914, THE JOURNAL A. M. A., July 4, 1914, p. 87.

courses given by one school with the courses given in the others. Thus a physician's opportunities in each school are seriously limited, and if he seeks to take work in two or more different institutions, he finds that the desired courses in one school conflict with those he would like to take elsewhere.

It is well known that, while a few of the graduate medical schools are doing good work, most of them are proprietary institutions conducted more or less as commercial enterprises. Hence the financial success of the institution, rather than the best interests of the physician seeking graduate instruction, too often dominates the management.

It is encouraging to note that certain universities are beginning to assume a responsibility for graduate medical instruction. Harvard and Tulane universities and the state universities of Minnesota, California and Alabama have established graduate medical schools, and other university medical schools are offering certain courses for graduate physicians. "Graduate medical instruction," as Arnold says, "should be on the same high plane as undergraduate teaching," and "should be under the control of good medical schools or universities."

Another step which may aid in the development of better graduate medical instruction is the establishing of central bureaus in New York, Philadelphia and other cities from which daily bulletins are issued showing what clinics are being held each day, when and where they are held and by whom, so that the visiting physician may attend those in which he may be interested. This scheme at least furnishes an introduction to some of the clinical work being done in each city, and may give many physicians a desire for further graduate medical instruction.

There is no greater need in medicine in this country to-day than a well-developed scheme for graduate medical work, the interests and convenience of the graduate student being ever borne in mind. Such a development would furnish the greatly needed opportunities whereby physicians could keep abreast of the improved methods of diagnosis and treatment, and enable them, in turn, to render better care to the patients depending on them.

CLINICAL DATA OF HUMAN RENAL DISEASE IN ELUCIDATION OF KIDNEY FUNCTION

Most investigations intended to solve the mystery of the renal secretion and disclose the mechanism whereby the urine is produced in the kidneys have depended on the study of animals. The human subject has been referred to far less frequently to elucidate the function of the kidneys, presumably owing to the complexity and intimate association of the different portions of these organs and the consequent difficulty in connecting an experimental finding with a definite anatomic structure. In recent years distinct progress has been made in differentiating the involvement of the different portions of the kidney brought about by the inroad of disease. Types of nephritis which are purely glomerular and such as are interstitial in character have become more easily recognized and distinguished. Fundamental differences in the location of the inflammatory disturbance are now known to be associated not only with distinct histologic appearances in the kidney, but also with clearly recognized clinical varieties of disease. The acute glomerular nephritis, such as may be observed in cases of scarlet fever, is frequently attended with almost complete suppression of urine; the localization of the inflammatory process in the interstitial tissue may present an entirely different urinary condition. If it were possible, therefore, to study the composition of the urine derived from kidneys for which the anatomic basis of the organs was precisely understood, the findings might throw light on the participation and respective rôle of the glomerular and tubular epithelium in the secretion of urine.

Such an investigation on man has been attempted by Dr. J. P. Kinloch[1] at the Ruchill Fever Hospital in Glasgow. His examination of the urine in various forms of nephritis indicates certain functions of the kidney. The glomerulus normally passes out by far the greater part of the water of the urine. This action of the glomerulus is in great part destroyed in glomerular nephritis. Thus a typical diminution in the quantity of urine occurs in the glomerular nephritis of scarlet fever and diphtheria, and this diminution is present at the very commencement of nephritis. In the glomerular nephritis of diphtheria, immediately after the initial diminution the quantity of urine steadily increases, and soon free excretion is in process, while in the glomerular nephritis of scarlet fever diminished excretion is long maintained. In the pure forms of interstitial nephritis in scarlet fever and diphtheria, on the other hand, no diminution of urine occurs other than can be explained by the elimination of an extra amount of water by the lungs and skin in the presence of pyrexia.

With respect to the elimination of the nitrogenous waste products, Kinloch advances the belief that the glomerulus may excrete a larger proportion of them than has hitherto been assumed. He remarks that this would explain the diminished nitrogen percentage and daily output in the acute period of glomerular nephritis in scarlet fever in cases in which the glomerular lesion is extensive. The retention of nitrogen might, however, be explained by supposing that it is dependent on secondary changes resulting from renal disease. The excretion of nitrogen appears to be unaffected by

1. Kinloch, J. P.: The Excretion of Urinary Solids: A Chemical Study of Urine in the Nephritis of Scarlet Fever and Diphtheria, Jour. Path. and Bacteriol., 1914, xix, 77.

the degenerative changes found in the tubular epithelium. The anatomic evidence shows that there are secondary changes in this epithelium in the various types of nephritis, and this tubular change is most marked in interstitial nephritis, in which nitrogen elimination is free throughout the nephritis.

The phenomena connected with the renal elimination of other urinary components — chlorids, sulphates, phosphates — seem to be too complicated to permit any final tenable generalizations to be made at the present time. The foregoing studies are among the investigations now being undertaken in many clinical laboratories in which data furnished by human subjects are being used to elucidate the obscure behavior of the kidneys in health and disease.

U. S. PUBLIC HEALTH SERVICE REPORT ON A TUBERCULOSIS TREATMENT

THE JOURNAL has already referred to the investigation of the von Ruck treatment for tuberculosis that was being made by the Public Health Service in response to a resolution of the United States Senate. The report of these investigations has just been made public as Senate Document 641. This follows close on the report from the same service on the Friedmann treatment, and, as in the latter, the verdict has been that von Ruck's claims have not been substantiated.

On account of the evident practical difficulties in carrying out the studies on human beings, the investigation was largely confined to the attempt to confirm or disprove by animal experimentation the reliability and success of von Ruck's methods and practices in the production of immunity to tuberculosis. The studies were begun in Asheville at Dr. von Ruck's laboratory, but were later transferred to the Hygienic Laboratory in Washington, the reason given being that Dr. von Ruck would not concede the right of the government's representatives to conduct an independent and uncontrolled investigation, and summarily interrupted the investigation in Asheville. It would seem from the report that the von Rucks did not have sufficient confidence in their methods to be willing to be investigated unless they had supervision and control over the investigation, truly a remarkable stand for a scientist to take.

The pursuance and completion of the investigation seems to have been much facilitated by the fact that in their publications the von Rucks have claimed an experimental basis for their system of tuberculosis therapeutics. They claim that their "vaccine" has been evolved from data derived from animal experimentation and certain serum tests, and the results of its administration are claimed to be shown also by the same methods. It has been claimed that the vaccine is stable, but as is clearly shown in the report, it is "unstable, subject to deterioration, and is impossible of duplication with certainty." From this it would appear, therefore, that it cannot be standardized for practical purposes, since by the time the results of the protracted tests are known, deterioration may have occurred. It will be recalled in this connection that von Ruck had severely criticized the work of Dr. R. S. Cummings[1] as reported in THE JOURNAL, in which that author showed that immunity in guinea-pigs was not produced by treatment with the vaccine but that the susceptibility of the animals to tuberculosis was apparently increased as a result of the treatment with the vaccine. From the report to the Senate it would appear that this criticism was unjustified, and that the real reason for the failure of the guinea-pigs to be protected was not the failure to do certain "serum tests" but the deterioration (now admitted by von Ruck) of the vaccine, aside from the fact that it is questionable "if indeed it had ever possessed the immunizing properties which Dr. von Ruck thought to have demonstrated."

Guinea-pigs were not immunized against injections of tubercle bacilli by the use of the vaccine in doses recommended by von Ruck and continued for the length of time, and longer, which he claimed as adequate for the purpose. On the contrary, it was found that most of the animals so treated exhibited increased susceptibility. Von Ruck insists as one of the important links in his work that the immunity of the animals shall be demonstrated by serologic methods before the final tests by inoculation, but the incorrectness of this attitude is shown in the report where the statement appears, "This decisive test [the result of virulent inoculation], having shown that the animals were not immunized, it is a matter of indifference [to me] what degree of supposed immunity they might have shown by serological methods." The experiments made to demonstrate that the serum of persons or animals treated with the vaccine, and said by von Ruck to possess the necessary immune antibodies to destroy the virulence of tubercle bacilli, failed to confirm that claim.

It was not found possible to obtain direct evidence as to whether or not the vaccine would render persons in health immune to tuberculosis, but the report states that the indirect evidence on this point offered by Drs. von Ruck in proof of the success of the vaccine in producing immunity was faulty and inadequate. One of the most striking portions of the report is that which discusses the attempts made in von Ruck's laboratory by some one interested in the outcome of the experiments to alter the entries in the laboratory record book in regard to the use of controls in certain serum tests. Such an occurrence, as the report

1. Cummings, R. S.: Animal Experiments with von Ruck's New Tuberculoproteins, THE JOURNAL A. M. A., June 21, 1913, p. 1936.

states, "had the effect of removing the entire test from [my] consideration as a scientific proceeding," and causes speculation as to whether the investigation was not desired for reasons other than purely scientific ones.[2]

THE SMEGMA BACILLUS

Since the search for the tubercle bacillus has now become an indispensable part of the routine examination of many types of clinical material, it is highly important to exclude every source of inaccuracy and every ascertainable possibility of error in diagnosis. The existence of a cause of confusion in the smegma bacillus has long been recognized by bacteriologists and well-trained laboratory workers, but the fact is not yet sufficiently appreciated by the physician at the bedside and in the clinic who furnishes the specimens for bacteriologic investigation. Indeed, we do not err seriously in asserting that far too little attention is as yet paid by practitioners to the proper collection and suitable preservation of the specimens intended for subsequent laboratory examination. Urine, sputum, blood, "smears" and comparable materials are in far too many instances transmitted to the clinical chemist and bacteriologist in a condition that is not complimentary to the intelligence or the technic of the physician responsible for their collection. Containers that are unclean and contaminated with unknown products of chemical nature, or that are unsterile and lead to abnormal decomposition and false diagnosis furnish a frequent source of annoyance to the expert who is expected to find in the "specimen" a correct answer to a clinical question. The average practitioner still needs to learn to treat his responsibility in the cooperative undertaking of laboratory clinical diagnosis more seriously.

The widespread existence of the smegma bacillus is a stumbling block in the path of diagnosis because the organism resembles the tubercle bacillus not only in its chief, and hitherto distinctive characteristic — its staining properties — but also in its morphology.[3] The smegma bacillus is found widely distributed over the surface of the human body. It appears in especially large numbers in any place where normal skin secretions are allowed to collect, as about the genitalia, under the foreskin in males, and between the labia in females, about the anus and the perineum, in the umbilicus, in the cerumen of the ear, about the teeth, etc. In this respect its occurrence is dependent on the degree of cleanliness of the patient. It also appears in the urine — more abundantly in females. This fact in particular emphasizes the possibility of a false diagnosis of genito-urinary tuberculosis, so that some writers have ventured the assertion that the confusion and difficulty encountered in the past in the bacteriologic examination of the urine where no account of the smegma bacillus has been taken has actually resulted in useless serious operations.

Fortunately, so far as the examination of the urine is concerned, the possibility of contamination of this secretion is not deep-seated. Smegma bacilli have never been found in the bladder or the deeper portions of the urethra. Some writers have therefore held that catheterization is sufficient to ensure exclusion of contamination of urine with extraneous smegma bacilli; but Young and Churchman[4] insist that the urine cannot be safely collected unless urethral irrigation is previously undertaken. The extreme importance of this feature will be realized in view of the statement of Brereton and Smith[1] that no method of differentiating the tubercle bacillus from the smegma organism by staining is entirely adequate for all cases, and the successful cultivation of the true smegma bacillus is open to question. According to these bacteriologists of the State Laboratory of Hygiene at the University of Wisconsin, however, by thorough cleaning of the genitalia, especially the meatus, and by catheterization, urine to be examined for tubercle bacilli can be collected with a fair degree of certainty of freedom from smegma bacilli. With such precautions, the finding of acid-fast organisms after decolorization with acid alcohol enables one to make a presumptive diagnosis of genito-urinary tuberculosis.

Final differentiation between the two types of bacilli can be made only by animal inoculation, according to Brereton and Smith. All investigators agree on the non-pathogenic character of the smegma organism. The animal experiment can thus be made the arbiter whenever uncertainty is encountered.

Current Comment

RURAL SCHOOL SANITATION

In 1911, the National Council of Education of the National Education Association appointed a committee on health problems in education. At the same time, the Council on Health and Public Instruction of the American Medical Association appointed a committee to cooperate with the National Education Association on this subject. These two committees, acting as a joint committee, have for three years been working in this field. The significance and practical value of the coordination of the efforts of the teaching and medical professions of the United States is apparent. The possibilities of such cooperation can hardly be overestimated. After careful consideration, the committee was unanimous in feeling that possibly the most important and certainly the most neglected field in school hygiene was the problem of rural school sanitation. When an effort was made to formulate plans

2. Copies of the report may be obtained by applying to the Chairman of the Senate Committee on Public Health and Quarantine, Washington, D. C.

3. A review of this subject, with references to the literature, has lately been published by Brereton, G. E., and Smith, K. W.: Studies on the Smegma Bacillus, Am. Jour. Med. Sc., 1914, cxlviii, 267.

4. Young, H. H., and Churchman, J. W.: Am. Jour. Med. Sc., July, 1905, p. 54.

and remedies, however, it was soon realized that although every one was agreed as to the paramount importance of this field, there was little, if any, definite information available regarding actual conditions. It seemed necessary, therefore, that before any remedies were proposed or even discussed, a reasonable amount of data should be secured. Fortunately these conclusions were completely in harmony with the views and policies of the United States Bureau of Education. As Hon. P. P. Claxton, the commissioner, was a member of the joint committee, it was possible to develop a plan for the study of rural school conditions in which all the forces interested could unite. During the spring of 1913, a field secretary employed by the joint committee made a careful statistical and photographic survey of about one hundred rural schools in four eastern states. At the same time, Prof. F. B. Dresslar of the Peabody College for Teachers of Nashville, Tenn., special agent of the federal Bureau of Education, was collecting a large mass of material on country schoolhouses in different states. Additional material was secured from various sources, principally through state boards of health. All of this information has been carefully collated, with the result that Bulletin 12 of the United States Bureau of Education, entitled "Rural Schoolhouses and Grounds," contains in its two hundred pages probably more information on this subject than has ever before been collected. For the details of this survey, the large mass of illuminating facts brought out and general conclusions drawn therefrom, the reader is referred to the report itself, which can be secured from the Bureau of Education at Washington. As a result of this study, the joint committee of the National Education Association and the American Medical Association has prepared a statement of minimum requirements for rural schools, being a summary of those conditions of location, construction and equipment which are the very least that should be tolerated in rural schools. This pamphlet can be secured from the Bureau of Education at Washington, from Dr. Thomas D. Wood of Columbia University, New York City, or from the American Medical Association. For the first time in the history of education and sanitation in this country, a reasonably comprehensive collection of facts regarding the sanitary condition of rural schools has been made and a standard of minimum sanitary requirements formulated. Parents, teachers, school boards, health officers and the general public have now been given a standard easily applied and within the physical and economic possibilities of any community. Adoption of this standard is the very least that can with decency and fairness to its children be expected of any community. As this standard becomes recognized through the distribution of these pamphlets, it will in a few years be possible to estimate the relative degree of development in any state by the condition of its rural schools. There are many other questions to be considered in solving the health problems in education, but persons interested in the sanitation of rural schools may feel gratified at the substantial and definite progress which has been made through the joint committee in the last three years in this field.

THE LOCALIZATION OF SECONDARY TUMORS

Why secondary tumors are so frequently located at points of injury remains to be explained. The fact here concerned has often been noted. Recent observations by Jones and Rous[1] at the Rockefeller Institute for Medical Research show that in mice an acute injury caused mechanically to the peritoneum renders it more suitable for the lodgment and growth of mouse tumor. The injury caused, for example, by a smooth glass rod where it lies in contact with the peritoneum develops a condition favorable to tumor implantation. Evidently the resistance manifested by a healthy peritoneum to the lodgment and growth of tumor fragments is not due to a general immunity reaction, but is referable to the physical characters of the lining membrane; for the local injury renders susceptible the part of the peritoneum immediately affected and that part only. Jones and Rous remark that a connective tissue highly cellular and perhaps still proliferating as the result of injury may well elaborate the stroma for a tumor more rapidly than normal connective tissue. In support of this idea they cite the fact that connective tissue reacting to an injury grows profusely and almost immediately when incubated in plasma, whereas normal tissue from the same region shows usually no growth whatever. The New York investigators summarize their observations with the statement that the secondary location of tumors at points of injury may be attributed with good reason to the presence at such points of an active connective tissue capable of elaborating a stroma rapidly and abundantly, for it is the proliferation of the subendothelial connective tissue to form a supporting stroma that determines the fate of free tumor cells, whether these lie on the peritoneum or within a vessel.

SMOOTH MUSCLES AND HEAT PRODUCTION

That heat is a product of muscular activity seems to be so clearly demonstrated by the evidence of everyday experience that we naturally hesitate to dissociate in our minds the idea of work and heat as simultaneous products of the contracting muscles. We exercise on a cold day to keep warm. One frequently hears the familiar comparison of a muscle to a heat engine and is reminded of the high mechanical efficiency of the human engine, that is, the relation of work to the total energy expended. On closer analysis, however, it now seems not improbable that the two products of muscular contraction, heat and work, are independent though simultaneous in their origin, and that any proportion between is accidental. The efficiency of a heat engine is determined by the "difference of absolute temperature obtaining on two sides of the machine." Inasmuch as it is difficult to imagine even minutely localized changes of temperature in the animal body of more than a few degrees, we are now told that we must discard altogether the analogy of the steam engine and seek some other explanation of the mechan-

1. Jones, F. S., and Rous, P.: On the Cause of the Localization of Secondary Tumors at Points of Injury, Jour. Exper. Med., 1914, xx, 404.

ism by which the muscle is enabled to transmute the chemical energy of its food into work or heat. "The muscle is, in fact, not a heat engine, but a chemical engine." Despite these newer contentions in what has been termed the "energetics" of muscle, we have scarcely been prepared for the suggestion that smooth muscle may not even produce any heat at all when it contracts. It is recognized that the metabolism of contracting smooth muscle may be comparatively low; and it is thus seen how the accompanying heat production may be correspondingly low. The smooth muscle may even maintain its tension at the cost of much less oxidation of materials than does cross-striated muscle. Modern measurements of the gaseous metabolism point in this direction. But Professor Snyder[1] of the Johns Hopkins University has just reported, as the result of experiments involving extreme precision and elegance of measurement, that there may be an absence of any measurable amounts of heat production accompanying the development of tension after stimulation of a smooth muscle. We promptly call to mind the prominent part taken by smooth muscles in blood-vessels, in the gastro-intestinal tract and in the urinogenital system, and wonder whether, with Snyder, we shall be forced to "abandon the vaguer views physiologists have held" concerning the functions of smooth muscles.

Medical News

(PHYSICIANS WILL CONFER A FAVOR BY SENDING FOR THIS DEPARTMENT ITEMS OF NEWS OF MORE OR LESS GENERAL INTEREST; SUCH AS RELATE TO SOCIETY ACTIVITIES, NEW HOSPITALS, EDUCATION, PUBLIC HEALTH, ETC.)

COLORADO

Personal.—Dr. Augustus E. Greene, who was seriously injured in an automobile accident at Greeley in November, is convalescent and has returned to his home in LaSalle. ——Dr. Charles A. Powers, Denver, is reported to be seriously ill with uremia in the Mercy Hospital.——Dr. Francis A. McNeill, Montrose, has been appointed surgeon for the Rico-Wellington Mining Company.

Medical Board Supplants Health Officer.—The county commissioners of El Paso County have named the following to take the place of the county physician, Dr. James H. Brown, Colorado Springs, recently resigned. Dr. Lewis H. McKinnie, Colorado Springs, surgeon; Drs. Leo W. Bortree, Colorado Springs, and Albert H. Peters, Colorado Springs, internists; Dr. Charles O. Giese, Woodmen, tuberculosis; Dr. Alexander C. Magruder, Colorado Springs, diseases of the eye, ear and throat, and Dr. Frank T. Stevens, Colorado Springs, alienist.

Medical Building Dedicated.—The Grabfelder Medical Building at the National Jewish Hospital for Consumptives, Denver, was dedicated, January 10. The building has been erected at a cost of $75,000 and is equipped with the most modern appliances. Mr. Samuel Grabfelder, Philadelphia, who has contributed more than $50,000 to the hospital, in addition to the gift of the medical building, made the presentation address. Rabbi William I. Freeman, founder of the hospital, responded and Dr. Moses Kleiner, Denver, delivered an address on "The Value of the Medical Building." The hospital now has ten buildings and has cared for more than 3,000 patients, two-thirds of whom are said to have been discharged cured.

IDAHO

Physician Exonerated.—The board of directors of the North Idaho Sanatorium, Orofino, after a searching investigation, have exonerated Dr. John W. Givens, superintendent of the institution, of the charges of neglect of duty, mismanagement and cruelty to patients, preferred by an attorney of Orofino.

State Board Criticized.—Moses Alexander, the new governor of Idaho who took office the first of the year, recommends consolidation of the State Board of Health and state dairy, food and sanitary departments, with a physician at their head, and says $32,000 would be ample to run them, or a saving of $31,140. He would retain the state bacteriological station in the capitol building, but would remove the chemical department to the state university at Moscow and would have done there the chemical work that now is done at the Lewiston normal, Albion normal and Academy of Idaho.

ILLINOIS

Loop Hospital Suggested.—Judge Charles N. Goodnow of the Chicago Morals Court has suggested that a hospital be erected in or near the loop to care largely for men, women and children found to be suffering from venereal disease.

Personal.—Dr. Leo M. Czaja, Chicago, sailed from New York, January 13, for work with the Servian Red Cross.—— Dr. Charles W. Miller, Peoria, was injured January 12, in a collision between his automobile and a street car.——Drs. Albert M. Earel and Robert S. McCaughney, Hoopeston, have been appointed local surgeons for the Chicago and Eastern Illinois Railroad.——Dr. Anna Dwyer has been appointed a member of the Chicago Morals Commission, of which Dr. George B. Young, health commissioner, is a member ex-officio.

Chicago Victorious in Fight for Theater Ventilation.—A recent report in the *Bulletin of the Department of Health* calls attention to the fact that on Jan. 1, 1913, of 630 motion picture theaters in Chicago only 45 complied with the law as far as ventilation is concerned. On Jan. 1, 1915, the total number of theaters was 616, of which only 17 were still in operation while requiring alterations to make them comply with the law. The next problems to which particular attention will be turned are the ventilation of factories and transportation conditions.

Housing and Medical Arrangements of Industrial Concerns.—The committee on factories of the Chicago Tuberculosis Institute met at the City Club, January 19, to discuss the subject of "The Housing and Arrangements of the Medical Department of Industrial Concerns." At this meeting Charles J. Hatfield, executive secretary of the National Association for the Study and Prevention of Tuberculosis, delivered a short address dealing with his impressions of the tuberculosis situation in Chicago, based on his visits to the various tuberculosis institutions and especially the new Municipal Tuberculosis Sanatorium.

IOWA

Sanatorium for Clinton County.—Physicians of Clinton have endorsed the plan for a county tuberculosis sanatorium to be built at the poor farm at a cost not to exceed $5,000 and a committee was appointed to confer with the board of supervisors regarding the matter.

Personal.—Dr. G. Walter Barr, Keokuk, for several years publicity agent to the Mississippi River Power Company, Keokuk, has resigned.——Dr. M. Charles Mackin, Clarinda, first assistant superintendent of the Clarinda State Hospital, has been appointed superintendent of the State Inebriates Hospital, Knoxville, succeeding Dr. George Donohoe, Knoxville, promoted to superintendent of the State Hospital, Cherokee, succeeding Dr. Matthew N. Voldeng, Cherokee, promoted to superintendent of the new State Epileptic Colony, Woodward.

KANSAS

Trachoma on Reservation.—Dr. Robert S. Magee, Topeka, has reported to the State Board of Health as the result of an examination of 154 children on the Mayetta Reservation, 33 out of 105 white children and 31 out of 49 Indian children, were found to have well-marked cases of trachoma.

Sanatorium Opened.—The Tuberculosis Hospital at Norton has been completed and is ready to receive patients. It can accommodate at present sixteen patients, but expects that the next legislature will make an appropriation sufficient to build two more dormitories so that at least sixty patients may be cared for.

Spread of Small-Pox.—In Pratt, where small-pox has been spreading since September 1, 250 cases were reported early

1. Snyder, C. D.: Is the Contraction of Smooth Muscle Accompanied by Heat Production? Am. Jour. Physiol., 1914, xxxv, 340.

in December. Schools, churches and all other public gatherings have been ordered closed. No deaths were reported.——Over forty-five cases of small-pox are reported from Columbus, Cherokee County. The disease is in very mild form.

MARYLAND

Urologic Clinic Open.—The James Buchanan Brady Urological Institute, established through the benefaction of the millionaire of that name, opened January 21. It is expected that later on, probably in the early spring, there will be dedication exercises. The new institute forms an impressive addition to Johns Hopkins Hospital group of buildings.

Personal.—Dr. James McFaddin Dick, Salisbury, underwent an operation for the removal of gall-stones at the Peninsula General Hospital, December 19.——The home of Dr. J. Carl Smith, Ellerslie, was seriously damaged by fire December 13.——Dr. Franklin P. Mall, Baltimore, professor of anatomy at Johns Hopkins Medical School, has been appointed head of the new department of embryology at Carnegie University, Washington, D. C.

Mentality Test in Child Labor Cases.—Arrangements have been made by the State Bureau of Labor Statistics to introduce a mentality test in determining eligibility of children applying for permits to work, that will not only diminish the danger of physical injury but will elevate the standards of child labor. Dr. James A. Nydegger, U. S. P. H. S., has been instructed by the government to cooperate with the bureau in this measure and all children applying for work will be subjected to the test. No permits for labor are given children under 14 years of age, other requirements being that they are physically sound and have received a rudimentary education.

Penitentiary Hospital.—The need of a new hospital at the penitentiary, where modern and sanitary treatment could be given the inmates, has just been realized. The old administration building has been remodeled and converted into a modern hospital. Laboratories, operating rooms, wards and adequate facilities for isolation have been installed. It has a tuberculous ward, open on all sides, allowing an abundance of air and sunshine to penetrate it. A roof garden has also been added to the building, affording the tuberculous patients constant outdoor life. The surgical outfit consists of a large operating room and all necessary sterilizing apparatus of a modern hospital in an adjoining room. The hospital kitchen has been fitted up to the latest idea of diet preparation.

Conference on Tuberculosis.—The governor has issued a proclamation announcing a conference on tuberculosis to be held at the State House, Annapolis, January 22 and 23, for the purpose of devising the proper course to follow in finally stamping out the white plague from the state. All public officers, health officers, physicians, nurses, county commissioners, and other officers of towns and cities are urged to attend the conference. The state is spending nearly $200,000 annually in maintaining sanatoriums for the treatment of this preventable disease. The facts and figures of the State Department of Health indicate that more than 8,000 people are suffering from this disease, and more than 4,000 new cases have been recorded in 1914. The records also show that 2,016 persons died from tuberculosis last year.

MINNESOTA

Contagious Department of Hospital Assured.—Work on the new contagious wards of the Minneapolis City Hospital, which had been suspended for several months on account of lack of funds, will now be taken up actively as the bonds necessary to raise the funds for the completion of four floors were sold January 7.

Leper Colony for Minnesota.—The Minnesota State Medical Society will ask the legislature the coming session, to set aside 10,000 acres in the northern part of the state on which to establish a colony for the segregation of lepers. It is said that there are now in the state fifty persons suffering from leprosy. The plan will also provide for the establishment of a branch hospital at the State University for clinical purposes.

Personal.—Dr. Samuel M. Kirkwood, St. Paul, who went to Montana on account of his health, has located on a ranch at Absarokee, Mont., and is reported to be improving.——Dr. Charles F. McComb, Duluth, has been appointed a member of the Advisory Commission of the State Sanatorium, Walker, vice Dr. James L. Camp, Brainerd.——Dr. John C. Staley, St. Paul, has been given a position on the staff of the American Hospital, Paris, and sailed for Europe, December 30.

NEW YORK

Plan for Better Health Work.—The State Public Health Council was received by the governor, January 12. Dr. Hermann M. Biggs, New York City, who headed the council, made an urgent plea for better health work.

Public Health and Mental Hygiene.—The State Hospital Commission which is charged with the supervision and control of the state hospitals for the insane is planning a campaign of prevention. During the past year 6,061 patients were received at the State Hospitals, of whom about one-quarter owed their breakdown to causes largely under their control. The plans of the commission comprise a series of short illustrated talks on mental hygiene to be delivered in different parts of the state, showing to the public the economic burden imposed on the state through insanity; the causes and prevention of insanity, and the problems of faulty heredity and environment. The plan also includes the giving of assistance to individuals in the form of advice as to how to obtain proper medical treatment and advice as to the maintenance of mental hygiene. The teaching and pathological branch of the service will be under the direction of Dr. August Hoch, New York City. The lectures will be given under the direction of the commission, with the approval of Health Commissioner Biggs, and correspondence with reference to dates for lectures is solicited with health officers and other readers of the *Health News*.

New York City

Protest Against Tooth-Wash Tax.—A committee of prominent New York physicians has been formed to petition congress to revoke the war tax on tooth washes and tooth pastes on the ground that such a tax is a severe blow to the work that has been done by state and municipal public health agencies in behalf of mouth hygiene. The committee has as its chairman Dr. Herbert L. Wheeler of the College of Dental and Oral Surgery, and includes Drs. Francis Delafield, Sigismund S. Goldwater, Thomas Darlington, Ernest Lederle, William S. Bainbridge, H. Holbrook Curtis, William Carr, Victor Hugo Jackson, O. Victor Limerick, William C. Deane, Frank E. Miller, Herbert D. Pease, William Gies and Edmund Prince Fowler.

NORTH DAKOTA

Personal.—Dr. Evan C. Stone, Balfour, while making a professional call near that place, was thrown from his buggy in a runaway accident, fracturing his clavicle.——Dr. Richard J. Church, Park River, has been appointed local surgeon for the Great Northern System.——Dr. Thomas M. Stixrud, Litchville, has been appointed surgeon for the Fargo division of the Northern Pacific System.

Public Health Association Organized.—At a conference of city and county health officers of North Dakota held at Devil's Lake, December 16, in response to the call of Dr. Charles J. McGurren, Devil's Lake, secretary of the State Board of Health, the North Dakota Public Health Association was organized and the following officers were elected: president, Dr. Henry H. Healy; secretary, Dr. Alfred Dean, both of Grand Forks. A committee to outline desired changes in the present state laws was appointed, consisting of Drs. J. W. Cox, Charles J. McGurren, Devil's Lake; Darie Lemieux, Dunseith. It was decided to ask the state legislature for an all-time state health officer and that the State Board of Health should consist of five, including two laymen.

OKLAHOMA

New Hospital at State Penitentiary.—A new convict's hospital at the State Penitentiary, McAlester, is now completed. It has a capacity of fifty beds, with accommodations also for the physicians and nurses in charge and is under the direction of Dr. John W. Echols, the penitentiary physician.

Personal.—Dr. Percy A. Smithe, Enid, sailed for Europe December 19, to join the Red Cross Unit K Hospital at Vienna, as third assistant surgical director of the unit.——Dr. John W. Duke, Guthrie has been appointed state commissioner of health, succeeding Dr. John C. Mahr, Shawnee, who will open a private hospital in Oklahoma City to be known as the Hotel for Sick People.——Dr. David M. Lawson, Nowata, took a bichlorid of mercury tablet in mistake for a headache tablet recently, but prompt treatment placed him out of danger.

PENNSYLVANIA

Philadelphia

Gorgas in Philadelphia.—Dr. William C. Gorgas, Surgeon-General U. S. Army, will address the Philadelphia County Medical Society on the sanitary and hygienic question involving the construction of the Panama Canal, at the Manufacturers Club, January 27. Afterward there will be a reception and supper in honor of Dr. Gorgas.

Change in Title.—An important change in title has just been authorized by the management of the Friends Asylum for the Insane at Frankford, Philadelphia. In deference to advanced public sentiment, application is to be made to the courts for amendment of the charter of the institution so that it will henceforth be officially known as "The Friends Hospital."

To Charge Clinic Patients.—Declaring that the Polyclinic Hospital is being habitually deceived by persons well able to pay for treatment, the faculty committee has announced a new policy which became operative at all clinics after January 15. After this date all patients were required to pay a fee of 25 cents for the first visit and 10 cents for each subsequent treatment.

Contracts Awarded.—On January 15 Dr. S. Lewis Ziegler, Director of Health and Charities, awarded two contracts, one for constructing an observation building at the Municipal Hospital for Contagious Diseases and the other for a Nurses Home at the same institution; the former to cost $68,924 and the latter $51,890. The total cost for the observation house will be $86,346, and for the Nurses Home $62,755.

SOUTH DAKOTA

Hospital Almost Ready.—The new Sacred Heart Hospital, Yankton, erected at a cost of $150,000, is said to be nearly completed and ready for occupancy.

Move into New Offices.—On January 1, Drs. Leslie G. Hill, Charles S. O'Toole, William G. Magee and Olaf Haraldson, moved into a nine-room suite of offices on the second floor of the new Citizens' National Bank Building, Watertown.

TEXAS

Waxahachie Physicians and Dentists Organize.—The physicians and dentists of Waxahachie have organized the Waxahachie Medical Society and have elected the following officers: president, Dr. Dickson G. Thompson; vice-president, Dr. Louis H. Graham; secretary, Dr. Seaborn H. Watson, Jr.

Banquet to Southern Surgeon.—Dr. Bacon Saunders, Fort Worth, newly elected president of the Southern Surgical and Gynecological Association, was the guest of honor at a banquet at the Westbrook Hotel, Fort Worth, December 29, given under the auspices of the Tarrant County Medical Society. Dr. Ira C. Chase, Fort Worth, officiated as toastmaster.

Personal.—Dr. Morris H. Boerner, Austin, state director of the Texas Hookworm Commission, has tendered his resignation to take effect January 15. He expects to go east to pursue graduate study.——Dr. Bascom Kavanaugh, while standing in front of his home in San Augustine, January 6, was shot and dangerously wounded.——Dr. Harold L. Warwick, Fort Worth, has returned from abroad.——Dr. Herschel G. Thomas is said to be seriously ill with pneumonia at his home in Handley.

WASHINGTON

Personal.—Dr. Albert E. Stuht, Spokane, has been elected physician of Spokane County.——Drs. Edward J. Stubbs and Robert D. Forbes, Seattle, have been commissioned as lieutenants in the Royal Army Medical Corps and assigned to duty at the training camp, Bedford, England.——Dr. Olaf T. Melde, Spokane, is ill with inflammatory rheumatism at his house.

Sanatorium Notes.—The Board of Health of Spokane County has approved the plans for the county tuberculosis sanatorium to be erected two miles east of Spokane, at a cost of $50,000.——The first unit of the Seattle City Sanatorium, erected at a cost of nearly $250,000, has been completed. It consists of one hospital building, one children's building, an administration building and a power plant, and will accommodate nearly 200 patients. The city council has allowed $95,000 for the maintenance of the sanatorium for 1915.——A contract for the Edgecliff County Tuberculosis Sanatorium has been awarded for $75,000, and the work is to begin at once.——The new Pierce County Tuberculosis Sanatorium, at Lake View, opened to receive patients, January 4.

WISCONSIN

Medical Women Incorporate.—The Wisconsin Medical Women's Society filed articles of incorporation with the secretary of the state, January 7. The organization has no capital stock and the incorporators are, Drs. Carrie A. Frost, Chippewa Falls, Mary Piper Houck, La Crosse, Helen A. Binnie, Milwaukee, and Maud F. Pratt, Appleton.

Diagnostic Stations to Be Established.—A committee has been appointed by the Milwaukee Medical Society to cooperate with Health Commissioner George C. Ruhland in establishing diagnostic medical stations throughout the city. The plan has been endorsed by the City Club and the school board has signified its willingness to allow public school buildings to be used for this purpose.

CANADA

Queen's University and the War.—No university in Canada has done any better for the war than has Queen's University, Kingston. More than eighty officers and men will go with the second contingent. The faculty of applied sciences especially has been well to the fore.

Talks in Interest of Wounded.—Dr. Brown-Landone, who has been in Toronto in the interests of the wounded from the north of France, addressed the Academy of Medicine on January 15. Transportation difficulties as well as lack of medical and surgical supplies, as dressings, bandages, surgical instruments, etc., occupied most of his attention. At the conclusion a committee of the academy, composed of a member from each hospital staff in the city was organized for the purpose of collecting supplies and forwarding them to Havre, France.

Medical Council Elections, Ontario.—The following are the territorial representatives elected to the Ontario Medical Council: Drs. George R. Cruickshank, Windsor; George M. Brodie, Woodstock; James MacArthur, London; Arthur T. Emmerson, Goderich; John J. Walters, Berlin; Samuel McCallum, Thornbury; Herbert S. Griffin, Hamilton; Eldridge T. Kellam, Niagara Falls; Robert H. Arthurs, Sudbury; Alexander D. Stewart, Fort William; Edmund E. King, Toronto; Herbert J. Hamilton, Toronto; Ferdinand A. Dales, Stouffville; Thomas W. H. Young, Peterboro; Thomas S. Farncomb, Trenton; William E. Spankie, Wolfe Island; William E. Crain, Crysler; J. Fenton Argue, Ottawa. In addition to these the collegiate representatives number six and the homeopathic five.

Personal.—Dr. Andrew Hunter has been appointed to the professorship of chemical pathology in the University of Toronto, replacing Prof. John B. Leathes, Toronto, who recently resigned to go to the University of Sheffield, England.——The Hon. Dr. Henri S. Beland, St. Joseph, Que., who was a member of the Laurier government, was thrice wounded by shell splinters while attending the wounded at Antwerp. A Belgian writing to Canada speaks of Dr. Beland's good work and of "Your brave Canadian, whose services will never be forgotten by many of our force."—Dr. Perry E. Doolittle, Toronto, has been appointed chief commandant of the war automobile organization.——Dr. Oswald Dinnick, formerly of Toronto, but for a number of years practicing in London, England, has resigned his position in a prominent London hospital and gone to the front with the R. A. M. C.——At the suggestion of Sir Ryckman Godlee, Dr. Herbert A. Bruce, Toronto, has organized a Canadian Belgian relief committee for the benefit of the Belgian doctors and pharmacists. Dr. P. Walter H. McKeown, Toronto, is secretary of this committee and Dr. D. J. Gibbs Wishart, Toronto, treasurer. The Canadian professions of physicians and pharmacists are being appealed to for contributions to this cause.

GENERAL

Congress on Local Anesthesia.—A clinical congress for the study of local, spinal and scopolamin-morphin anesthesia will be held in Chicago, January 26 to 28. Evening sessions will be held in the rooms of the Chicago Medical Society, 25 East Washington Street, sixth floor, and clinics will be held at Cook County, Polyclinic, Post-Graduate, Presbyterian, Alexian Brothers and Mary Thompson hospitals and the Illinois Medical School.

The Cutter Lectures.—The Cutter Lectures in Preventive Medicine for the year 1915 will be given at the Harvard Medical School by Dr. Victor C. Vaughan, professor of Hygiene and Physiologic Chemistry and dean of the School of Medicine and Surgery of the University of Michigan, and Dr. Joseph Goldberger, Surgeon, United States Public Health Service, Washington, D. C. Dr. Vaughan will lecture on "The Phenomena of Infection" on April 14, 15 and 16. Dr. Goldberger's subject will be "Diet and Pellagra" and will be given in one lecture April 2. These lectures are given annually under the terms of a bequest from John Clarence Cutter, whose will provided that the lectures so given should be styled the Cutter Lectures on Preventive Medicine, and that they should be delivered in Boston, and be free to the medical profession and the press. Others interested are cordially invited.

Bequests and Donations.—The following bequests and donations have recently been announced:

Home for Crippled Children, Philadelphia, $10,000; Episcopal Hospital, Philadelphia, $5,000 by the will of Letitia H. Harrison.

St. Louis Medical Society, $42,813.39, by the will of Mrs. Franzisca Bartscher in memory of her husband, Dr. Hugo W. Bartscher.

Jewish Hospital, Philadelphia, contingent bequest of $6,000 by the will of Caroline Solomon.

To build a sanatorium at Hot Springs, Ark., Dr. W. G. Choate has been bequeathed $57,000 by Patrick Fenton of Knoxville, Ia.

Presbyterian Hospital, Chicago, $50,000 to be known as the Albert Arnold Sprague endowment; Chicago Orphan Hospital, $5,000 by the will of Albert A. Sprague.

Philadelphia Hospital for the Treatment of Contagious Diseases, $50,000, the fund being devised "to any hospital in Philadelphia which shall be devoted to the treatment of contagious diseases, for the purpose of endowing a ward therein, to be called the Hope Memorial Ward, and in case there shall be no such hospital in the city, at the time of my death, or no hospital which will accept such a legacy on these terms, I then give the said fund to the Episcopal Hospital." Eleven hospitals entered claims for this bequest; Presbyterian Hospital and German Hospital, Philadelphia, each one-fifteenth part of the estate, by the will of James F. Hope.

Germantown Dispensary and Hospital and St. Timothy's Hospital, Roxborough, each $10,000, by the will of Helen Louise Merrick.

Jewish Hospital, Philadelphia, $4,000 contingent bequest by the will of Adam E. Wiegand.

Jewish Hospital, Philadelphia, $3,000 by the will of Annie Price.

State Charities Aid Association, St. John's Guild, New York Nursery and Children's Hospital, each $7,500; New York Infirmary for Women and Children, Babies' Hospital, New York Association for the Blind and Manhattan Eye, Ear and Throat Hospital, each $5,000 by the will of Augustus Cleveland Brown.

St. Luke's Hospital, New York City, $7,000 by the will of Sophia Frances Scott.

FOREIGN

Small-Pox in Vera Cruz.—The state department on January 6 received news that small-pox had broken out in Vera Cruz, Mexico.

Jail Sentence for Slandering Physician.—The penalty of one month's imprisonment was promptly inflicted on a workingman recently, in Germany, for stating that a certain physician had made out a fraudulent death certificate. The workingman's appeal to a higher court, the Reichsgericht at Leipzig, was rejected.

New Japanese Institute for Infectious Diseases.—Dr. Shibasaburo Kitasato announces that he is no longer director of the Imperial Institute for the Study of Infectious Diseases, home department of the Japanese government. With associates he has severed his connection with the institute and started a new private institution, named Kitasato Institute for Infectious Diseases, Tokyo at Sankocho, Shibaku, Tokyo. Those who will act as directors of laboratories in the institute are: Drs. Taichi Kitashima, Kiyoshi Shiga, Sahachiro Hata, Mikinosuke Miyajima, Shinkichi Umeno, Yutaka Teruuchi and Shigeru Kusama.

Deaths in the Profession Abroad.—Lothar von Frankl-Hochwart, professor of pathology of the nervous system at the University of Vienna, a pioneer in research on neuropathology, especially the physiology and pathology of the hypophysis, bladder and on internal secretions. His death was the result of a tumor in the brain, a subject to which he had devoted years of special research.——Dr. Magen of Breslau, editor of the *Aerztlicher Vereinsblatt*, a leader in matters affecting the economic welfare of the profession, aged 50.——M. Heyde privat-docent of surgery at the University of Dresden, succumbed to typhoid at the front, aged 34.——F. Sasse, who took Rehn's place as chief of the surgical service at Frankfurt a. M., died December 15 from the results of a scratch on the finger at an operation four weeks before, aged 48.

WAR NOTES

Spinal Meningitis and Diphtheria in the Salisbury Plain Camp.—Six cases of spinal meningitis are reported as occurring in the camp of Canadian soldiers in Salisbury Plain. The Fifth Royal Highlanders are quarantined on account of diphtheria. The situation is not regarded as serious in respect to either disease.

Exposition Showing How the Wounded are Cared For.—An exhibition of models, photographs and diagrams, showing the whole plan of the organized care for the wounded at the front has just been opened at Berlin. The exhibition is in the cupola hall of the Reichstag building and was opened in December with considerable ceremony. From the trench to the convalescent home, the course of the wounded soldier is shown, as also the general arrangements and aspect of a battle field and of a naval battle.

"Michelaines" for the Soldiers.—Dr. Michel, the inventor of the well-known Michel skin clips, has devised a knitted scarf which can be used as a head, throat, chest or arm protector. It consists essentially of a woolen band 48 inches long and 16 inches wide, with a median slit 8 inches long, large enough for the soldier's head to pass through.

The particular crochet stitch which Dr. Michel recommends for this purpose is the following: Use medium sized wool and a crochet needle having a diameter of one-

fourth of an inch. 1. Make a loose chain 48 inches long. 2. Crochet two extra stitches for turning. 3. Throw thread over needle. For the first row, take up the two threads of the chain, throw thread over, put it under the two stitches of the first loop of chain; pull through; throw thread over again, then pull through the first two, then pull through the

second two; repeat to end of chain. Take two stitches to turn with; proceed exactly as the first row only put through the single back stitch. Crochet eighteen rows up, then on the nineteenth row stop short 4 inches from the middle; break the thread. Begin on the other side 4 inches from the middle, thus leaving an 8 inch opening and crochet to the end. Continue again as before until you have eighteen more rows, then fasten the threads securely. Sew on buttons as shown in the figure.—*La Press Médicale*, Nov. 19, 1914.

Red Cross Activities.—Another large shipment of hospital supplies of all sorts was shipped to Budapest and Vienna by the American Red Cross, January 17, on the steamer *Finland* from New York. The supplies will go via Genoa, Italy, and are consigned to the American Red Cross surgeons and nurses in Austria-Hungary.——The American Red Cross has ordered 17 light automobile ambulances, 12 of which have been given by Yale University and the other 5 by Harvard University. The Yale ambulances will have in Yale colors the inscription, "From the Students of Yale," and the Harvard machines will have in crimson the inscription, "From the Students of Harvard." Painted on the tops will be large red crosses on a white ground. These ambulances will be equipped to carry two wounded soldiers each.——A consignment of twenty cases of hospital clothing and 100 bales of absorbent cotton and bandages sent to the central committee of the German Red Cross in Berlin, has been received. ——Dr. Sofie Nordhoff-Jung, associate manager of the American Red Cross Hospital, Munich, acknowledges the receipt of a large quantity of hospital supplies sent by the American Red Cross, including absorbent cotton, gauze, bandages, hospital clothing, etc.——It is reported from Servia that every available building in all the towns near the front has been converted into hospitals and that still wounded

soldiers must sleep sometimes on floors in corridors and sheds and that on account of the lack of bandages and gauze, wounds can be dressed only every three or four days. Surgeons are working eighteen hours a day and nurses and local surgeons are laboring to the point of exhaustion. There are 100,000 wounded Servians and Austrians in Servia. There is a lack of absorbent cotton and hospital supplies of all kinds.——The British Red Cross has provided a hospital unit of thirty persons and $20,000 worth of supplies which are being conveyed to Salonica by Sir Thomas Lipton on his yacht.——The American Red Cross on request of Madame Vandervelde, has ordered six sterilizing outfits for the Belgian Red Cross.

Aid for Belgian Physicians.—Dr. F. F. Simpson, treasurer of the committee of American physicians for the aid of the Belgian profession reports that in his stirring appeal for aid for the Belgian physicians, Professor Charles Jacobs of Brussels states that 1,000 doctors are poverty-stricken, and that 2,000 to 3,500 doctors are suffering cruelly through this war. That 2,000 physicians need to be supplied the necessities of life would seem a low estimate. It seems probable that the physicians' families will average four members. That means that 8,000 members of physicians' families are dependent on outside contributions. Four dollars and forty cents will supply sufficient food to sustain life for four for one month. Belgian physicians and their families, therefore, absolutely need at least $8,800 worth of food every month. For the first month contributions of American physicians aggregated $1,414. Will the medical profession of America accept its opportunity and meet its share of this responsibility by prompt and repeated contributions?

Every cent of every dollar contributed will be available for the purchase of supplies as the carrying charges are provided for by the American Commission for Relief in Belgium. The first one thousand dollars contributed have been expended by the executive committee for food and supplies, and the packages properly labeled have been started for their destination.

The full list of names of all contributors up to and including Jan. 16, 1915, follows:

CONTRIBUTIONS

Union Trust Company, Pittsburgh, Pa.	Banking Facilities
Sterrett & Acheson, Attys., Pittsburgh, Pa.	Professional Service
Dr. Frank Overton, Patchogue, N. Y.	$ 25.00
Dr. Franklin H. Martin, Chicago, Ill.	100.00
Dr. F. F. Simpson, Pittsburgh, Pa.	100.00
Dr. S. Peskind, Cleveland, Ohio.	25.00
Dr. and Mrs. George C. Smith, Mansfield, Ohio.	5.00
Dr. Samuel Ayers, Pittsburgh, Pa.	20.00
Dr. Edwin Walker, Evansville, Ind.	25.00
Dr. Boleslaw Lapowski, New York, N. Y.	10.00
Dr. Thos. E. Satterthwaite, New York, N. Y.	20.00
Dr. Thomas L. Stedman, New York, N. Y.	25.00
Dr. Richard E. Eustis, Boston, Mass.	10.00
Dr. Mark W. Richardson, Boston, Mass.	10.00
Dr. Wm. Allen Pusey, Chicago, Ill.	25.00
Dr. M. C. Shelton, Joplin, Mo.	5.00
Dr. Henry F. Walker, New York, N. Y.	25.00
Dr. Boyd Cornick, San Angelo, Tex.	2.50
Dr. David W. Cheever, Boston, Mass.	25.00
Dr. Virgil P. Gibney, New York, N. Y.	25.00
Dr. John B. Murphy, Chicago, Ill.	100.00
Esther F. Boland, Boston, Mass.	5.00
Dr. Chauncey W. Norton, Saranac Lake, N. Y.	25.00
In Memory of H. H. C., Boston, Mass.	10.00
Dr. S. J. Meltzer, New York, N. Y.	15.00
Dr. David Bovaird, New York, N. Y.	25.00
Evelyn G. Manter, Winthrop, Me.	10.00
Dr. L. Maude Warren, Baldwinsville, Mass.	5.00
Dr. Ambrose Talbot, Kansas City, Mo.	10.00
Dr. J. G. R. Mainwaring, Flint, Mich.	25.00
Dr. James C. Thompson, Pittsburgh, Pa.	25.00
Dr. Lowell C. Frost, Hollywood, Cal.	10.15
Emma T. Frost	10.15
Dr. F. W. Stetson, Boston, Mass.	10.00
Dr. Guy L. Hunner, Baltimore, Md.	25.00
Dr. George E. Lyon, Moweaqua, Ill.	5.00
Dr. Edward E. Krumbhaar, Philadelphia, Pa.	10.00
Academy of Medicine, Cincinnati, Ohio.	100.00
Dr. David S. Moore, Birmingham, Ala.	10.00
Dr. C. M. Banks, Springfield, Tenn.	1.00
Marion Co. Medical Soc., Marion, Ohio.	25.00
Dr. Henry M. Swift, Portland, Me.	10.00
Dr. E. H. Mackay, Clinton, Mass.	5.00
Dr. R. O. Raymond, Flagstaff, Ariz.	10.00
Dr. J. H. Bertrand, DeForest, Wis.	5.00
Dr. E. S. Reedy, Seattle, Wash.	5.00
Dr. and Mrs. H. C. Wetherill, Denver, Colo.	50.00
Dr. Burnley Lankford, Norfolk, Va.	3.00
Dr. Charles W. Allen, Hoboken, Pa.	5.00
Dr. Wm. Van V. Hayes, New York, N. Y.	25.00
Drs. Parker and Parker, Peoria, Ill.	5.00
Dr. Heman B. Chase, Hyannis, Mass.	10.00
Dr. John B. Wheeler, Burlington, Vt.	25.00
Dr. Stuart McGuire, Richmond, Va.	50.00
Dr. John G. Clark, Philadelphia, Pa.	50.00
Dr. F. R. Underwood, Seattle, Wash.	5.00
Dr. Abraham Jacobi, New York, N. Y.	100.00
W. A. M., Ossining, N. Y.	2.00
Dr. Theodore C. Janeway, Baltimore, Md.	15.00
Dr. Isaac M. Heller, New York, N. Y.	5.00
Dr. S. H. Miller, Joplin, Mo.	5.00
Dr. B. F. Saylor, Redding, Cal.	10.00
Dr. J. Wolf, Pittsburgh, Pa.	10.00
Jasper Co. Medical Society, Joplin, Mo.	10.00
Dr. Sidney A. Chalfant, Pittsburgh, Pa.	10.20
Dr. Frederick Abbe, Boston, Mass.	10.00
Dr. J. Riddle Goffe, New York, N. Y.	25.00
Dr. Henry F. Graham, Brooklyn, N. Y.	5.00
Total	$1,414.00

EXPENDITURES

450 boxes of food purchased from Austin, Nichols and Co., at $2.20 per box	990.00
Balance	$ 424.00

LONDON LETTER

London, Jan. 1, 1915.

The War

THE DISLOCATION OF PRIVATE PRACTICE

Owing to the large number of physicians withdrawn from private practice for service at the front, and the still larger number required for the great army in training in this country, considerable dislocation has been caused in civil practice. The General Medical Council has submitted to the War Office proposals to avoid as far as possible the resulting inconveniences to the civil population from deficiency of medical service, and to the physicians from change of station. These proposals have been accepted. In order that medical officers may as far as possible be able to give part of their time to civil practice in their own districts, the following regulations have been adopted by the War Office: 1. When a mobilized territorial unit is moved from its own locality in Great Britain: (*a*) The medical officers may be allowed to effect exchanges, direct or indirect, with territorial medical officers in the new locality when possible. (*b*) If this is not feasible, the places of medical officers not desiring to accompany their units may be taken by junior medical officers willing to take temporary commissions and serve with such units, the original medical officers being demobilized until the return of the units to their own localities, or until their services can be otherwise utilized there. 2. When a mobilized territorial unit volunteers for imperial service abroad, the medical officer will be given the option of accompanying it or serving with the reserve unit raised for home defense in its stead, vacancies in both units being filled up by junior medical officers with temporary commissions. To facilitate such exchanges, a list is kept at the War Office of junior practitioners willing to accept general service either at home, in the field, or abroad from which substitutes can be detailed as occasion arises. The medical officers themselves might be of assistance in procuring substitutes to take their places possibly from their own neighborhoods, whose names would be placed on the list.

THE BELGIAN "ODYSSEY"

A committee appointed by the British government has issued a report on the reception and employment of the Belgian refugees in this country. It has given a most interesting historical survey. At first the Belgians moved to the nearest place of refuge still held by their army. Gradually, however, they were pushed back to the frontiers, and began to seek shelter in neighboring countries. From first to last it has been calculated that about a million refugees—nearly a sixth of the total population—have abandoned Belgian soil. Of these, Holland received the largest share, 500,000 or more; a large number, especially from the Ardennes and the southern provinces, fled to France. In England about 110,000 arrived and arrangements are being made to bring over more from Holland to relieve the excessive pressure prevailing there. It is characteristic of our national ways that the duty of attending to the refugees should have been undertaken by voluntary organizations. But, however willing private individuals might be to undertake the national duty of relieving the distress of our allies, it soon became evident that the task was assuming such gigantic proportions that no voluntary organization could cope with it. The government then stepped in and offered the refugees the hospitality of the British nation. In one week alone, after the fall of Ostend, 26,000 Belgians were landed at Folkestone. Between September 20 and October 24, 35,000, all destitute, were met at the pier, fed and dispatched to London. Arrangements for feeding and housing were made by the Metropolitan Asylums Board. Some conception of the work done will appear from the fact that from September 10 to November 28, 45,532

refugees passed through the government hostels. The only refugees for whom neither the government nor the War Refugees Committee were responsible were 6,000 Russian and Polish Jews who came chiefly from Antwerp. Their care was undertaken entirely by their coreligionists. The anxiety of all classes in the United Kingdom was shown by the fact that offers of hospitality were received for over 100,000 refugees. The poor vied with the rich in showing practical sympathy. Trade unions subscribed to the wants of their fellow laborers. Families with barely room for themselves pinched and squeezed to give hospitality to the poor Belgians.

With regard to the problem of employment, the Belgian government intimated that it required for military service all unmarried men between the ages of 18 and 30, and asked that no employment should be given to any of that class. Two principles were adopted by the committee: No Belgian labor should be employed until every reasonable effort had been made to find British labor through the agency of the labor exchanges. No Belgian labor should be employed at rates of wages lower or on conditions less favorable than those generally observed in the district. A central register has been prepared of the refugees, classifying them according to sex, age and vocation.

PARIS LETTER

PARIS, Dec. 31, 1914.

The War

THE STATISTICS OF WOUNDS RECEIVED IN WAR

Statistics concerning the results of war-time wounds received at the war department up to the date of December 1 give the following results:

Wounded who have been able to return at once to the front, 54.5 per cent.

Wounded sent away for convalescence, 24.5 per cent.

Wounded under treatment in hospitals, 17.4 per cent.

Dismissed from the army, 1.46 per cent.

Dead, 3.48 per cent.

The figures are particularly interesting for they show that, thanks to the care which our wounded receive in the hospitals, more than half are able to return to the ranks of their commands. They show, moreover, that the mortality from wounds has been reduced to a figure unknown in previous wars.

PREVENTIVE INJECTIONS OF ANTITETANUS SERUM

December 14, Dr. P. Bazy emphasized before the Académie des sciences the necessity of using preventive injections of tetanus antitoxin on all those wounded in war without regard to the origin of the wound. Contrary to general opinion, bullet wounds are frequently infected with Nicolaier's bacillus. In nine out of 120 bullet-wounds not treated with tetanus antitoxin, Bazy has seen tetanus develop; all nine were fatal. Preventive injection ought to be made as early as possible—at the front and in the trains. It appears to give good results, however, even when practiced on the fifth day. Bazy believes that the dose of 10 c.c. adopted in veterinary medicine can be reduced in man, whose weight is so much less, to 1 or 2 c.c. This would help to prevent excessive consumption of the serum even if it is used in all cases.

ASSISTANCE FOR WOUNDED MOSLEMS

A group of orientalists, among whom are M. Paul Boyer, administrator of the Ecole des langues orientales, and some of the professors of the school, have just formed a society called the Société d' assistance morale aux blessés militaires musulmans for the purpose of visiting and in other ways taking an interest in the welfare of wounded Mohammedan soldiers.

PROHIBITION OF REMOVAL OF THE BODIES OF SOLDIERS KILLED BY THE ENEMY

The minister has received many requests for permission to remove the bodies of soldiers killed by the enemy. No such permission has been granted. Removal and transportation of bodies is explicitly forbidden for hygienic reasons, in the zone of military operations, and no favoritism has been shown. Instructions have been given that so far as possible all graves shall be marked.

MEASURES OF WAR HYGIENE

At the last meeting of the Paris section of the Association générale des hygiénistes et techniciens municipaux, the chemist Samuel Bruère, of the laboratory of toxicology, described an economical sand and charcoal filter for the decolorization of water sterilized by potassium permanganate. The filter is composed of a glass lamp-chimney over the bottom of which is tied a piece of fine cloth, and in which is placed successive layers of fine sand, pulverized charcoal and coarser sand. A medium-sized lamp chimney should hold about 10 gm. of charcoal, which is sufficient to decolorize 50 liters (quarts) of water treated with 10 mg. of permanganate per liter, a dose sufficient to destroy in ten minutes all the dangerous germs and toxins in the most contaminated water.

M. G. Risler, president of the section of hygiene of the Musée Scial, spoke of the necessity of rebuilding our cities which have been destroyed by the enemy with all possible hygienic improvements, especially from the point of view of the possible extension of the city.

THE PUBLIC FOOD-SUPPLY

The military administration has taken measures to reduce the requisitions of living animals for the intrenched camp of Paris and to reserve the best of these animals which are fit for reproduction and for work for ultimate distribution in the provinces invaded by the enemy.

In view of the necessity of compensating for the ravages made among French flocks and herds, the Académie des sciences believes that in order to increase the animal food-supply, sufficiently to meet the needs of the year 1915 and those following it would be necessary to forbid, as much as possible, the slaughter of young animals and to make as economical arrangements as possible for producing canned, salted and frozen meats. The proposal was made to create, without waiting for the end of the war, large cold-storage warehouses, such as are used abroad, especially in Great Britain, for the preservation of frozen meats. The foundation of abattoirs with refrigerating plants was also recommended for the regions where animals are raised for food.

PROMOTION OF HOSPITAL INTERNS TO THE GRADE OF ASSISTANT SURGEON

To reach the grade of assistant surgeon, it is necessary to have the degree of M.D. Up to the present, therefore, hospital interns, not having received a doctor's degree, were restricted to the subsidiary functions of assistant physician, which corresponds to the grade of sergeant, without possibility of advance and under conditions which did not permit them to render all the medical and surgical service which might be expected from their professional experience. The government has decided that during the war, interns of the hospitals of Paris may be promoted to be assistant surgeons.

DR. MARIE WOUNDED

Among the physicians wounded is Dr. Auguste Marie, physician in chief of the asylums of Villejuif and director of the psychiatric laboratory at the Ecole des Hautes Etudes of Paris. He was struck by a bullet in the head while he was caring for a wounded man in a trench.

A VISIT FROM SWISS PHYSICIANS

A mission of Swiss physicians has come to France to visit our hospitals and sanitary formations. It is composed of Colonel Hauser, chief medical officer of the Swiss army, Colonel de Montmollien, physician of the second division and Majors Roehring and Hepli. The mission visited successively the hospitals of Lyons, Dijon and Paris.

PROPHYLAXIS OF INFECTIOUS DISEASES IN THE ARMY

The administration of the health service of the war department has just sent to physicians of the training camp instructions on the prophylaxis of the principal contagious diseases. It is recommended that young soldiers and new recruits be vaccinated against small-pox on their arrival at the camp. Ten days afterward, the antityphoid vaccination should be begun (four successive injections of 0.5 c.c., 1 c.c., 1.5 c.c. and 2 c.c. of Vincent's vaccine) which ought to be ended six weeks after arrival. The reservists are also examined on their arrival and made to undergo the double vaccination against small-pox and typhoid. The instruction then prescribes various measures of early isolation in cases of scarlet fever, diphtheria, mumps, measles and cerebrospinal meningitis; the disinfection of clothing, bedding, etc., as well as the cleaning of living quarters.

If typhoid should break out, an investigation should be made of the drinking-water of the barracks, which should be effectively purified if found contaminated. Chlorinated lime, 20 per cent. or copper sulphate 5 per cent. or still better, calcium chlorid 2 per cent. are to be used for the daily disinfection of water-closets, and, if necessary, their contents.

The physician of the camp should report the appearance of the first case of contagious disease immediately to the commander and to the director of the health service. He should, moreover, send the director of the health service, on the first, the eleventh and the twenty-first of each month, statistics of the number of cases since the beginning of the epidemic and the number of cases during the ten preceding days.

THE DAIRY HERD OF THE ENTRENCHED CAMP OF PARIS

The population of Paris suffered from lack of milk only at the beginning of the mobilization during the short period while our railways were encumbered otherwise. To prevent suffering, not only among infants but also among the wounded and patients in hospitals, our military authorities have placed in Paris, especially at the Bois de Boulogne and at the Bois de Vincennes a large number of dairy cows. The arrangement presented great difficulties at first; animals which had suffered from underfeeding and disease, inexperienced attendants chosen from among the refugees, etc. Notwithstanding a safe milk has been provided, thanks to the selection of healthy cows used under regular sanitary inspection. Examination by experienced veterinarians weeded out the cows that were not giving milk, those that were pregnant and those infected with various diseases, especially tuberculosis. All the cows (several thousand) were tuberculin-tested. About 15 per cent. reacted and were at once isolated. Those suspected of any local lesion were at once killed. Mammitis, contagious or not, was carefully hunted out. Frequent analyses are made at the laboratory of the service of veterinary inspection at the center markets. All milk found dangerous is denatured and thrown away, while milk which is merely inferior, that is, milk from the healthy udders of tuberculous cows or of cows with mammitis and milk from cows which have not been delivered is placed in containers of special form. It is boiled and used for feeding calves intended for use in future breeding. Milk of the best quality from the selected cows (which is, however, pasteurized as an additional precaution) is distributed free to the amount of 9,000 or 10,000 liters a day, to more than a hundred philanthropic institutions—hospitals, dispensaries, gouttes de lait, etc.

As M. Gabriel Petit, professor at the Ecole vétérinaire d'Alfort, has said, sanitary veterinary inspection has here given an object-lesson with regard to the services which it will render to public hygiene when the scientific control of milk is systematically organized at Paris.

Measures Against Alcoholism

In view of the important results obtained by the anti-alcohol campaign in Sweden and Norway and the recent energetic measures taken in Russia, the Academie des sciences has passed a resolution in favor of the immediate limitation of the number of licenses to sell alcoholic drinks, the definite prohibition of absinthe and similar liquors and the suppression of the privilege of converting wine into brandy.

The Bust of Pasteur at the Academy of Medicine

At the annual public session of the Académie de médecine, the family of Pasteur presented to the academy a portrait bust of the great scientist by Paul Dubois.

Death of Alfred Fournier

French medical science has just sustained a great loss through the death of the celebrated syphilographer, Dr. Jean Alfred Fournier, formerly clinical professor of clinical and syphilitic diseases at the Faculté de médecine de Paris.

Fournier was born in Paris in 1832. He began his medical studies under the direction of Ricord. He received his medical degree in 1860 and was appointed agrégé professor of the Faculté de médecine de Paris three years later. He occupied the medical chair of cutaneous and syphilitic diseases for many years and his remarkable lessons at the hôpital Saint Louis won for him celebrity in scientific circles all over the world. He had been a member of the Académie de médecine since 1880.

Among Fournier's most important works were his "Researches into the Contagion of Chancre" (1857), "Researches on the Incubation of Syphilis" (1865), "Syphilis of the Brain" (1879), "Syphilis and Marriage" (1880), "Syphilitic Heredity" (1891) and "Treatment of Syphilis" (1909).

Death of Dr. Jacquet

Dr. Lucien Jacquet, physician of the hospitals of Paris, has just died at Royan. He specialized in diseases of the skin, but, unlike many specialists, he took into consideration rather the whole organism with its disturbed functions than the cutaneous lesion by itself. Thus he did not share the general opinion as to the contagious character of alopecia. He regarded it as nervous origin, generally related to dental caries. Of late years, he insisted also on the relations between certain cutaneous affections, such as pimples of the face, and the habit of eating too quickly (tachyphagia). Jacquet was one of the first men in France to warn against the alcohol peril against which he worked by lectures and publications. He was the author, in collaboration with Besnier and Brocq, of a "Dermatologic Practice" and, in collaboration with Brocq, of an "Elementary Outline of Dermatology."

Personal

Dr. Massabuau, agrégé professor at the Faculté de médecine de Montpellier, has been appointed professor of pathologic anatomy at that school.

Dr. Vautrin, agrégé professor at the Faculté de médecine de Nancy, has been appointed professor of clinical surgery at that school.

The Société de chirurgie de Paris has elected the following officers for 1915: president, Dr. Rochard; vice-president, Dr. Picque, and secretary, Dr. J. L. Faure.

BERLIN LETTER

Berlin, Dec. 22, 1914.

The War

HEALTH OF SOLDIERS

The health of our army in general has remained good, although our troops have suffered somewhat from the typhoid epidemics which have prevailed among the civil population in France and Belgium. There has been as yet no great epidemic, and the total number of cases has remained far behind that of the Franco-Prussian War, which amounted to 75,000. The death rate varies much in different army corps, but unfortunately in exceptional cases reaches 20 per cent. Naturally, it is impossible so far to form even an approximate judgment as to the influence of the protective vaccination. The same is true of dysentery, which in the autumn reached a quite marked dissemination, but at present, according to reports received from several sources, appears to have almost completely declined. With reference to the etiology of dysentery, we have gained considerable information through this war; it seems that more organisms are involved than was formerly supposed. The Y bacillus has been found very frequently, especially in cases with a mild course which did not give the impression of dysentery. On the other hand, it has been found that the disease caused by Flexner's germ runs a severe course. Cholera is not present in our army. The cases introduced from Russia and Galicia have been completely isolated. Exanthematic typhus has occurred in a few cases among our troops in Poland.

DISEASES DUE TO CLIMATIC CONDITIONS

The diseases due to cold, especially pneumonia, are strikingly few, considering the long periods that the soldiers lie in the trenches exposed to wind and water.

THE SUBSTITUTES FOR BANDAGE MATERIAL

The authorities have recommended economy in the use of bandage material in view of the interruption of the importation of cotton. Several substitutes have been recommended, particularly lint (charpie), moss and materials made of cellulose.

EPIDEMICS SPREAD FROM RUSSIA

Some cases of cholera have been discovered among the Russians in two prison camps. A few days ago an epidemic of typhus fever broke out among several hundred Russians in the prisoners' camp near Cotbus in the province of Brandenburg. Unfortunately, two Germans also were attacked with this disease and an under-officer of the medical corps died of it. Apart from these two cases, cholera and typhus have been restricted hitherto to the Russians. The principles introduced into practice by Robert Koch have so far yielded brilliant results in the fight against epidemics in war. By immediate isolation of the patients and careful disinfection of all infected excreta, the most effective measures for the localization of the epidemic were carried out at once. In this relation the destruction of lice is of the greatest importance for typhus fever.

This "zoonosis" is very widely distributed in Russia. Our soldiers, and especially the officers, make very lively complaints about the evils which they have to suffer from the

vermin in the Polish houses. Besides lice, fleas and bedbugs play a not insignificant rôle. The lack of cleanliness which prevails in Polish dwellings defies all description. For this reason, the soldiers prefer to stay in the artificially constructed rooms in caves or the wooden barracks or tents rather than be quartered in houses. For destruction of lice, articles published in the medical journals recommend certain remedies, the most thorough of which is naturally the burning of worthless clothing. But in addition there is disinfection with a jet of steam and treatment with sulphur fumes. Professor Blaschko recommends for protection against body lice, the anointment of the body with 5 per cent. naphthalin petrolatum or dusting with a naphthalin powder. As a protection against head lice, he recommends as best of all, to cut the hair very short.

TREATMENT OF GUNSHOT WOUNDS

New evidence is continually afforded of the benignity of gunshot wounds. Even wounds of the spinal cord appear not to afford as unfavorable a prognosis as had been assumed from experience in the war in the Balkans and the Russo-Japanese War. In some cases early operations have been quite successful. As a rule, to be sure, severe injuries of the spinal cord result fatally. The extent of injuries which a soldier with a good constitution can overcome is shown by a case in which the soldier was struck at the same time by eight bullets from a machine gun. One struck the head, one went obliquely through the upper jaw, another wounded the chin, one bullet went through the right arm and another wounded the left wrist. Only two were satisfied with wounding his helmet and his boot. It is reported that even this patient is on the road to recovery.

THE FOOD SUPPLY

The instruction of the people in questions regarding nutrition, is conducted with great zeal. Although several experts in scientific matters have stated that the attempt to starve us out has no prospect of success, yet on the other hand, it is self-evident that economy should be practiced in the use of the foodstuffs which we have on hand. In this matter housewives and cooks are the chief ones who must practice precautionary measures. For this reason, physicians, as well as the leaders of the woman movement who have been active in social and philanthropic work, are spreading information both in lectures and in circulars with regard to the nutritional value of the various foodstuffs. A circular published by Rubner and Zuntz, professors of political economy and physiology, has the following advice which, on account of its fundamental importance, may well interest those countries which are not involved in the war at present:

"1. Treat all nutritious material respectfully and economically and use carefully every utilizable refuse.

2. Eat the army bread (that is, rye bread with the addition of 20 per cent. of potato starch) and demand it from your baker. It is nourishing and as palatable as plain rye or wheat bread. Potatoes are plenty but the bread cereals will suffice only if from 10 to 20 per cent. of potatoes are baked in the loaves or if less bread and more potatoes are eaten.

3. Reserve the wheat bread, such as rolls, for patients and invalids and restrict particularly the use of cake, butter cakes and other pastry to the lowest limits for we are short one-third of the previously necessary supply of wheat and wheat flour.

4. Be sparing in the use of meat, fat and butter. To be sure, we have now an abundant supply of cattle for slaughter because many farmers no longer have the fodder formerly imported, but that is no reason why one should consume more meat. If this happens, the supply will soon become very scanty. The use of meat, fat and butter should be restricted now so that our people will suffer no lack at a later time. Whoever can, should lay in a stock of preserved provisions, that is, smoked ham and bacon and dried sausages and lard for his home use, deliberately and without hurry.

5. The bulk of the food must be formed by our indigenous vegetable material, potatoes, rye, wheat, oats, buckwheat, vegetables, fresh and preserved fruit. Sugar can be used freely. Sugar, which is on hand in almost excessive quantities, is an excellent nutriment and a substitute for fat and butter. In addition, one should use milk and cheese, particularly skimmed milk and skimmed milk cheese, which are an excellent substitute for meat on account of their protein contents."

Nothing is said in this circular about alcohol but there is in Germany a tendency to temperance, as I have formerly mentioned, which previous to the outbreak of the war had led to very satisfactory results. The use of spirits for beverages, according to the official figures for 1912-1913, had fallen again in the German Empire. The corresponding figures for 1911-1912 were 1,933,532 hectoliters, or 2.9 liters per capita of the population, reckoned as 100 per cent. spirits. The consumption in the last fiscal year amounted to only 1,871,200 hectoliters, or 2.8 liters per capita. This was the figure also in 1909-1910. On the other hand, the employment of tax-free spirits for industrial purposes had increased: 1912-1913, 2.6, as compared with 1911-1912, 2.4 and 1910-1911, 2.2 liters per capita.

Marriages

WARREN BARRETT ALLEN, M.D., Oakland, Cal., to Miss Gertrude I. Mitchell of San Francisco, December 9.

LOUISE ANDERSON MERRIMON, M.D., Asheville, N. C., and Mr. Nelson R. Perry, at Cincinnati, January 6.

FRED EVERETTE HERZER, M.D., to LAVINA ALICE BAXTER, M.D., both of Loma Linda, Cal., January 2.

DUDLEY STEELE CONLEY, M.D., New York City, to Miss Sidney Ann Boales of St. Louis, January 2.

JOSEPH RALPH WAGNER, M.D., to HARRIETT BEALE JENNINGS, M.D., both of Palacios, Tex., January 2.

WESLEY LEWIS BOYDEN, M.D., Green Bay, Wis., to Miss Ora Lee of Oconto, Wis., January 1.

RALPH LELAND TAYLOR, M.D., to Miss Nelle Warthen, both of Davisboro, Ga., December 23.

SAMUEL M. HOWELL, M.D., to Miss Annie Harvey, both of Cartersville, Ga., December 27.

ARISTINE PIXLEY MUNN, M.D., and Charles Recht, both of New York City, January 2.

JOHN D. GREENAMYER, M.D., to Miss Grace Allen, both of Niles, Mich., January 1.

Deaths

Charles William Chancellor, M.D. Jefferson Medical College, 1853; during the Civil War medical director of General Pickett's Brigade in the Confederate service; after the close of the war professor of surgery and dean of the Medical School of Washington University, Baltimore; consul to Havre, France, during the Cleveland administration; school commissioner of Baltimore; for several terms alderman of the city, and in 1877 president of the common council; a member of the board of managers of the Maryland State Hospital for the Insane, and president of the Maryland State Lunacy Commission in 1880; secretary and executive officer of the Maryland State Board of Health in 1885; for the last fourteen years a resident of Washington, D. C.; died at his home in that city, January 3, aged 84.

Edward Maxwell Wiley, M.D. Indiana Medical College, Indianapolis, 1875; of Lexington, Ky.; a Fellow of the American Medical Association; president and censor of the Fayette County Medical Society; for four years superintendent of the Eastern Kentucky State Hospital, Lexington; a neurologist and psychiatrist of high rank; died in St. Joseph's Hospital, Lexington, January 11, after an operation for hypernephroma of the left kidney, aged 64. The regular monthly meeting of the Fayette County Medical Society was devoted to resolutions on Dr. Wiley's death and to eulogies of his worth as a man and a physician.

William Boddie Rogers, M.D. Bellevue Hospital Medical College, 1878; a member of the Tennessee State Medical Association; professor of surgery and dean of the faculty of Memphis Hospital Medical College since 1886; surgeon of the Bluff City Grays during the yellow fever epidemic of 1878-1879; president of the city board of health for three terms; a surgeon of renown and a teacher of great discretion, progressive and yet conservative; died in St. Joseph's Hospital, Memphis, January 13, a day after an operation for ulcer of the stomach, aged 58.

William Pitt Lawrence, M.D. University of Nashville, Tenn., 1878; a member and president in 1908 of the Florida State Medical Association; once president of the Hillsboro County Medical Society; surgeon of volunteers throughout the Spanish-American War, and later on duty during the Boxer uprising in China where he served as acting assistant surgeon U. S. Army for two years and a half; one of the most prominent and respected physicians of Tampa, Fla.; died suddenly at his home in that city, December 24, from heart disease, aged 57.

Walter C. Parker, M.D. Medical College of Ohio, Cincinnati, 1886; a member of the Kentucky State Medical Association and formerly president of the Kentucky Midland Medical Association; local surgeon of the Louisville and Nashville Railway at Versailles, Ky.; died at his home in that place, November 26, from pulmonary tuberculosis, aged 55.

Charles Ross Jackson, M.D. Yale University, New Haven, Conn., 1888; a Fellow of the American Medical Association; founder and first president of the West Side Clinical Society, New York City; consulting physician of the General Hospital, Saranac Lake; formerly adjunct professor of clinical diagnosis in the New York Polyclinic; resident physician at the Lake Placid Club; a prolific writer and a novelist of no mean ability; died at his home in Lake Placid, N. Y., January 4, from angina pectoris, aged 47.

Charles Barkley Warder, M.D. Jefferson Medical College, 1885; University of Pennsylvania, Philadelphia, 1888; a member of the board of managers and for many years medical director of the Stetson Hospital, Philadelphia, and a member of the board of directors of the Philadelphia Hospital Association; a specialist on diseases of the ear, nose and throat; died at his home in Philadelphia, January 5, from cerebral hemorrhage, aged 51.

George Huston Chapman, M.D. Jefferson Medical College, 1874; of Uniontown, Ky.; a member of the Kentucky State Medical Association and president of the Union County Medical Society; chief judge of surgical instruments at the World's Fair, Chicago, in 1893; died suddenly near Uniontown, December 20, from heart disease, aged 65.

Charles Curtiss Wadsworth, M.D. University of Wooster, Cleveland, 1874; a member of the Medical Society of the State of California; formerly president of the San Francisco Medical Society and for ten years secretary of the State Board of Medical Examiners; died at his home in San Francisco, January 1, aged 65.

John Milton Adey, M.D. Albany (N. Y.) Medical College, 1899; for fifteen years registrar of vital statistics of Cohoes, N. Y.; a member of the staff of the Cohoes Hospital and for a time an official of the Vital Statistics Bureau of the New York State Board of Health; died at his home in Cohoes, N. Y., December 26, aged 40.

Miner C. Hazen, M.D. University of Michigan, Ann Arbor, 1855; said to have been the oldest member of the Middlesex County (Conn.) Medical Association; county commissioner for six years and one of the original corporators of the Middlesex County Hospital; died at his home in Haddam, December 25, aged 85.

William D. Howe, M.D. University of Louisville, Ky., 1885; of Carlisle; while under treatment for malignant disease in the Good Samaritan Hospital, Lexington, died January 2 from an incised wound of the thigh severing the femoral artery, self-inflicted it is believed, with suicidal intent, aged 48.

Henry Roberts, M.D. Jefferson Medical College, 1845; a pioneer resident and practitioner of North Scranton, Pa.; postmaster of Providence, Pa., for several years and for nine terms a member of the select council of Scranton; died at the home of his daughter in Towanda, Pa., December 31, aged 93.

Thomas Hutchinson Ashton, M.D. University of Nashville, Tenn., 1865; formerly a member of the Nebraska State Medical Association; surgeon of volunteers during the Civil War; for more than quarter of a century a practitioner of Syracuse, Neb.; died at his home in Lincoln, Neb., December 29, aged 73.

Fred Hamilton Weir, M.D. University of Michigan, Ann Arbor, 1885; of Portland, Ore.; a specialist on diseases of the eye, ear, nose and throat; a member of the Oregon State Medical Association; formerly a resident of Laporte, Ind.; died at his home in Portland, about January 3, aged 50.

Sterling J. Gates, M.D. Tulane University, New Orleans, 1895; also a graduate in pharmacy; a Fellow of the American Medical Association and formerly a practitioner of Franklin, La.; but for the last two years a resident of Cliff, N. Mex.; died at his home in Cliff, about January 4, aged 44.

Calaway Garner Reagin, M.D. Miami Medical College, Cincinnati, 1877; a Confederate veteran; for many years a practitioner of Duquoin, Ill., and once president of the Perry County Medical Society; died at his home in Fort Meade, Fla., December 31, from pneumonia, aged 79.

Franklin A. Clement, M.D. Washington University, St. Louis, 1873; for thirty-five years local surgeon for the Burlington System at Greenfield, Ill., and twice mayor of the city; died at his home December 25, aged 64.

William P. White, M.D. University of Louisville, Ky., 1869; a Confederate veteran and health officer of Louisville, Ky., from 1891 to 1894; died at his home in that city, December 27, from pneumonia, aged 71.

Nathaniel Morton Ransom, M.D. Berkshire Medical College, Pittsfield, Mass., 1861; for more than fifty years a member of the Massachusetts Medical Society; also an adventist clergyman; died at his home in Somerville, Mass., January 8, from arteriosclerosis, aged 85.

Joseph Hunt Wilson, M.D. New York University, New York City, 1850; founder of the Somerville (N. J.) Library and once editor of the *Unionist Gazette;* an employee of the New York Custom House for many years; died at his home in Somerville, January 2, aged 85.

John Otto Grotthuss, M.D. Wisconsin College of Physicians and Surgeons, Milwaukee, 1900; of Stockholm, Wis.; coroner of Pepin County; died in St. John's Hospital, Red Wing, Minn., January 9, from embolism, after an operation for tumor of the bladder, aged 51.

Mahlon Henry Beary, M.D. College of Physicians and Surgeons, Keokuk, Ia., 1880; surgeon of the One Hundred and Twenty-Eighth Pennsylvania Volunteer Infantry during the Civil War; died at his home in Allentown, Pa., September 18, from senile debility, aged 74.

Hercule Dansereau, M.D. Albany (N. Y.) Medical College, 1853; for more than fifty years a resident of Thibodaux, La.; a Confederate veteran; for several years a member of the board of aldermen of Thibodaux; died at his home in that place, January 2, aged 82.

Aaron S. Miller, M.D. New York University, New York City, 1862; a member of the Medical Society of the State of Pennsylvania; died at his home in Saegersville, Pa., December 31, from cerebral hemorrhage, aged 75.

Nelson McGarvin, M.D. Victoria College, Coburg, Ont., 1856; for many years a practitioner of Butte, Mont., but for the last three years a resident of Waterloo, Ont.; died at his home in that place, December 25, aged 84.

Robert S. Tidwell, M.D. University of Tennessee, Nashville, 1890; a Confederate veteran, and for many years resident physician of Tate Springs, Tenn.; died in that place, December 16, from epilepsy, aged 68.

John Miller Smith, M.D. Hahnemann Medical College, Chicago, 1869; one of the oldest practitioners of Lafayette, Ind., died at his country home near that city, December 26, from chronic bronchitis, aged 67.

Tilford T. Metcalf, M.D. Medical College of Ohio, Cincinnati, 1882; for twenty-five years county treasurer of Kenton County, Ky.; died at his home in Independence, December 25, aged 54.

James Winter Wamsley, M.D. Jefferson Medical College, 1893; also a graduate of the Philadelphia College of Pharmacy; died suddenly at his home in Philadelphia, December 21, aged 40.

William Payton Tucker, M.D. Ensworth Medical College, St. Louis, Mo., 1893; formerly of Kansas City, Mo.; died in a sanatorium in Colorado Springs, Colo., December 25, aged 45.

C. DeWitt Hudson, M.D. Georgia College of Eclectic Medicine and Surgery, Atlanta, 1901; president of the Waco (Texas) Sanitarium; died in Kalamazoo, Mich., December 25.

James Dick Wallace, M.D. Rush Medical College, 1893; a member of the Iowa State Medical Society; died at his home in Plover, Ia., December 17, aged 51.

Charles W. Lawton, M.D. University of Southern California, Los Angeles, 1905; of Taft, Cal.; died in a hospital in Bakersfield, Cal., December 21, aged 34.

James B. Ewart, M.D. Memphis Hospital Medical College, Memphis, Tenn., 1891; of Ione, Ark.; died in a hospital in Fort Smith, Ark., December 26, aged 71.

Charles M. Smith, M.D. Albany (N. Y.) Medical College, 1854; a physician and druggist of Albany, N. Y.; died at his home in Albany, September 27, aged 84.

Thomas Smith Middleton, M.D. Medico-Chirurgical College of Philadelphia, 1897; of Chicago; died in New Hope, Pa., December 26, aged 46.

A. E. Van Deventer, M.D. Northwestern University Medical School, Chicago, 1863; died at his home in Oswego, Ill., about December 22.

John H. Morton, M.D. University of Tennessee, Nashville, 1888; died at his home in Knoxville, Tenn., about December 26, aged 52.

Isaac F. Stafford (license, years of practice, Montana, 1889) died at his home in Pony, Mont., December 23, aged 85.

The Propaganda for Reform

IN THIS DEPARTMENT APPEAR REPORTS OF THE COUNCIL ON PHARMACY AND CHEMISTRY AND OF THE ASSOCIATION LABORATORY, TOGETHER WITH OTHER MATTER TENDING TO AID INTELLIGENT PRESCRIBING AND TO OPPOSE MEDICAL FRAUD ON THE PUBLIC AND ON THE PROFESSION

HAYDEN'S VIBURNUM COMPOUND

Report of the Council on Pharmacy and Chemistry

The following report on Hayden's Viburnum Compound was prepared by a member of the Council's Committee on Therapeutics. The Council held the preparation in conflict with its rules and authorized publication of the referee's report.

W. A. PUCKNER, Secretary.

Hayden's Viburnum Compound, according to the advertising circulars, was first compounded in 1860 by W. R. Hayden. The medical profession is told that W. R. Hayden

". . . found by his experiments that a combination of the active principles of *Viburnum Opulus, Dioscorea Villosa,* combined with aromatics, proved a valuable remedy for *Spasmodic Dysmenorrhea.*"

As in 1860 W. R. Hayden was not a physician (he received a diploma from the Eclectic Medical College, New York, in 1867), and, so far as we can learn, he was not a pharmacist or chemist, one wonders what kind of "experiments" he made. Hayden's Viburnum Compound is put on the market by the New York Pharmaceutical Company of Bedford Springs, Mass. The name of this concern may sound imposing, until it is realized that it is merely a trade name adopted by Hayden in exploiting his nostrum.

The advertising matter formerly claimed that Scutellaria (skull-cap) was one of the ingredients of Hayden's Viburnum Compound. As this is no longer mentioned, it is fair to assume that even the manufacturer does not consider the composition to be of vital importance. Stress is laid on the superior efficacy of viburnum opulus in the conditions for which the preparation is recommended; it is emphasized that it is viburnum opulus, and not viburnum prunifolium, that is the important ingredient of Hayden's Viburnum Compound. The label, in accordance with the requirements of the Food and Drugs Act, declares that the preparation contains 50 per cent. alcohol. The claim is made:

"It is free from all narcotics and leaves no unpleasant after-effects."

The medical profession is told that Hayden's Viburnum Compound is a remedy in:

"Hysteria, Bilious Colic, Cramps of Cholera Morbus, Muscular Cramps, . . . Nervous Diseases of Pregnancy, Threatened Abortion, Post-Partum Pains, Puerperal Convulsions, Rigid Os, Dysmenorrhea, Menorrhagia."

DISCUSSION OF ALLEGED INGREDIENTS

Viburnum Opulus (Cramp Bark).—Botanists and pharmaceutical chemists declare that this drug has not been on the American market for many years, if ever, and that the drug used and even described as viburnum opulus is really the bark of another plant. Viburnum opulus and its preparations are therefore to be dropped from the next United States Pharmacopeia. The principal constituents of viburnum opulus are stated to be a glucosid, viburnin, a bitter resin, and a little tannin, with small amounts of earthy carbonates and phosphates and organic acids (Culbreth, Ed. 4, 1906, p. 591). The glucosid and resin being bitter, the drug might have a slight stomachic action (if, indeed, any such effect is actually produced by "bitters"); the small amount of tannin might make it slightly astringent; its fruit acids (citric and malic) might make it slightly diuretic. Even if viburnum opulus were present in Hayden's Viburnum Compound there is no clinical or laboratory proof that it, if given alone—without alcohol or other drug—has any antispasmodic or nervous sedative action.

Dioscorea Villosa (Wild Yam).—This drug contains a saponin and an acrid, irritant resin. It has never been proved clinically or experimentally that this drug has any action whatever except that its irritant resin might, if taken in sufficient quantity, cause irritation of the stomach and vomiting.

Aromatics.—The irritation produced by concentrated aromatics causes increased peristalsis and consequently may, if there is no obstruction, relieve intestinal stasis and intestinal colics. Therefore, a preparation containing large amounts of aromatics, especially if given in hot water, would have practically the same effects in the "cramps of a cholera morbus" or other forms of acute diarrhea as a home-brewed cup of spiced tea—and no more.

Alcohol.—This drug is a muscle relaxant, and sufficient doses might, by relieving spasm, relax a muscularly contracted os uteri and relieve post-partum pains. Alcohol dilates the blood-vessels both in the abdomen and on the surface of the body. It may thus either relieve uterine bleeding by lowering the blood-pressure and causing more blood to go to other parts, or increase uterine bleeding by relieving arterial and muscle spasm. Alcohol is also a habit-forming narcotic (Hayden's Viburnum Compound is advertised as "free from all narcotics"!) and when habitually used by either males or females tends to impair the capacity to produce normal offspring.

Even if the manufacturer's "formula" be accepted, Hayden's Viburnum Compound contains no therapeutically active ingredient except alcohol and aromatics. The recommended dose of this preparation is ". . . two teaspoonfuls in six of boiling hot water or milk and one teaspoonful of sugar, every fifteen or twenty minutes until relief is obtained."

"Frequently after taking the Viburnum Compound the patient will sleep soundly for several hours from the sudden cessation of pain; in such cases she should never be awakened through any fear of oversleeping, as Hayden's Viburnum Compound does not contain any narcotic whatever, nor does it leave any disagreeable after-effects, and it may be given to a child when necessary without any special caution."

Read the foregoing and then remember that it means that one teaspoonful of alcohol (the equivalent of two teaspoonfuls of whisky) is to be given in hot water, every fifteen or twenty minutes until relief is obtained and the patient is asleep. Why not use plain language and say "until she is drunk"?

The thoughtful physician would consider it decidedly unwise to give alcohol to a young girl, to a prospective mother, or to a young mother, except under extraordinary circumstances. He would know that the menstrual pains for which this preparation is recommended are likely to be recurrent, and that the repeated taking of alcohol for recurrent pain is fraught with danger—the danger of initiating the alcohol habit. If, however, a physician does elect to give alcohol as a drug, he must let the conditions that govern each individual case determine whether it is not better to give it as whisky, or to disguise it in a prescription of his own. Above all the physician should be conscious that he is giving the drug, alcohol; and this is not the case when he prescribes a ready-made nostrum. If he writes a prescription containing whisky or other alcoholic he will take measures to avert the dangers inseparable from the use of this drug.

CONCLUSIONS

1. Even if the manufacturer's formula for Hayden's Viburnum Compound be accepted, it is apparent that any therapeutic activity the preparation may have is due essentially to the alcohol and aromatics.

2. Alcohol is a narcotic drug, and a habit-forming drug. Physicians ordering this preparation may, by so doing, be initiating the alcohol habit.

3. Whatever result is obtained by the use of Hayden's Viburnum Compound in the treatment of uterine or pelvic disturbances, is due to the alcohol it contains. The fact that menstrual pains are likely to recur might, when this preparation is relied on, become a factor in the formation of the alcohol habit.

4. Whatever result is obtained by the administration of Hayden's Viburnum Compound in the treatment of gastro-intestinal disturbances is due to the alcohol and the aromatics it contains.

5. Whisky has the same alcoholic content (50 per cent.) as Hayden's Viburnum Compound; the dangers in the use of whisky are well known and its value as a therapeutic agent is being questioned more and more every year.

Holding the exploitation of this proprietary a danger to the public and a detriment to scientific medicine the referee recommends publication of this report as a protest against such irrational therapeutics. The profession should recognize that most, if not all, of the preparations recommended for painful menstruation and for all kinds of pelvic pain contain large percentages of alcohol, and that whatever physiologic effect is produced is, for all practical purposes, due to the alcohol.

Correspondence

Salvarsan and Neosalvarsan in Syphilis

To the Editor:—The article by Drs. Nelson and Haines of Fort Leavenworth, "Observations of the Results of Seven Months' Experience with Salvarsan in the Treatment of Syphilis" (The Journal, Dec. 26, 1914, p. 2277), is of great interest to physicians called on to decide between the use of salvarsan and neosalvarsan. Their conclusion that salvarsan is far more curative than neosalvarsan is, in my opinion, quite correct. My own experience has fixed the superiority of salvarsan at approximately 50 per cent., i. e., four doses of salvarsan given from seven to ten days apart give me curative results equal to six doses of neosalvarsan given at the same intervals, although the clinical results from the first doses of each are the same.

Detroit Tuberculosis Sanatorium.

It is to be regretted that some of the conclusions from their experience are rendered of less value owing to their having used the combined treatment. The quite opposite effects of mercury and salvarsan on the Wassermann positive render such observations rather unintelligible.

Any given number of cases of active secondary syphilis thoroughly treated with mercury alone, by injection or inunction, for six weeks will show a large percentage of negative Wassermanns, although the absence of reinfections after millions of such treatments indicates that mercury is not curative. Mercury is a peacemaker and not a destroyer, the treponemata become inactive, the antibodies disappear, and the serum reaction becomes negative. On the contrary, salvarsan is a destroyer of the treponemata and, responding to the released endotoxins, the antibodies increase and the negative serum test of a latent case of syphilis becomes positive and the positive Wassermann of an active case becomes more positive.

In spite of this fact, numerous reinfections show us that salvarsan when sufficiently used is curative. Observations of many such cases indicate that the serum reaction of a case cured by a sufficient salvarsan treatment without mercury will remain positive, a fading positive, for a month or two after the patient is cured. This fading positive would probably be absent in patients getting mercury also, and likewise, other patients getting the combined treatment would show a negative Wassermann while yet uncured. One drug increases and the other lessens the serum reaction, so what can we judge from such reactions when both drugs have been used?

A serum test which becomes negative during the third or fourth month after the treatment would indicate not a cure but the arrival of latency.

It is to be hoped that these careful observers having such controllable cases will supply another series, treated with salvarsan alone. Such observations would be of the greatest value and, as mercury alone has never proved curative, while salvarsan alone has cured many patients once, some twice and in at least one instance, to my knowledge, three times, they would be doing their patients no possible injustice.

The failure of these authors to notice any endotoxin reactions whatever seems impossible. I cannot conceive of seventeen patients with secondary syphilis receiving their first full dose of salvarsan or neosalvarsan (0.1 gm. of salvarsan to each 25 pounds of net weight, or 50 per cent. more of neosalvarsan) without an endotoxin reaction. I do not mean that such patients would become ill, but there would at least be a fractional rise above the temperature of the patient while on the table probably only 0.1 or 0.5 degree, and one or more bowel movements. Either or both of these symptoms constitute a positive endotoxin reaction, but temperatures should be noted hourly. In secondary cases given full doses of salvarsan every week or ten days until the endotoxin reaction cannot be noted by the most careful observation, the patients may, in my opinion, be regarded as cured; they will be found to have usually a fading positive Wassermann which becomes negative in from two to eight weeks.

E. H. Martin, M.D., Hot Springs, Ark.

[The foregoing letter was referred to Dr. Nelson, who replied:]

To the Editor:—We have at this hospital at this time fifty cases of syphilis undergoing treatment with mercury. When this is completed our results will be published. These results I do not feel at liberty to anticipate, but in view of the positive statement in the third paragraph of Dr. Martin's letter will say that in seven weeks of energetic treatment with mercury alone the serum reaction has not been changed in a single case of the fifty under observation. This agrees with work previously done. In reference to the last paragraph concerning reactions, desire to say that while Dr. Martin may not be able to believe in the absence of reactions in the cases mentioned, yet nevertheless it is a fact.

Kent Nelson,
Major, Medical Corps, U. S. Army,
Fort Leavenworth, Kan.

Provision for Tuberculous Infants

To the Editor:—Dr. Alfred F. Hess was certainly correct in his article of recent date on "The Neglect to Provide for the Infant in the Antituberculosis Program." Interest in the child as an important factor in this problem has greatly increased however; and Dr. Sach's letter in your issue of January 2 shows that this includes the infant.

I beg to enclose a photograph of the Anna T. Dodge Pavilion for Children at the Detroit Tuberculosis Sanatorium. One quarter of the space in this building is devoted to the care of infants. It was opened on November 29, 1914, and the age of the youngest patient there at present is nine months.

The building was built especially for children and has many devices for their safety, care and comfort. We have already been obliged to use an isolation room for a child found to be a diphtheria carrier. The building includes a large school-and-play room which has its own screened-in porch. If any of your readers are planning such a building we shall be glad to answer questions about this one.

Herbert M. Rich, M.D., Detroit.

Suspension of Medical Courses in Vienna

To the Editor:—Knowing that many physicians are desirous of hearing the exact conditions in regard to courses and medical work in Vienna, I am taking the liberty of writing you.

Since the war began, no medical courses have been given in Vienna, and none will be until the war is over. The club rooms of the American Medical Association of Vienna will remain open, and information may be obtained by writing our secretary.

All of the clinics in Vienna are running the same as before the war, with a much reduced force of assistants and patients. In regard to medical work in Vienna at the present time, I would not advise any one to come until after the war is over, although for a limited number of men, work could be secured in certain hospitals or clinics.

It is my opinion that as soon as the war is over, the courses and work will begin at once, the same as before.

FRANK C. DAVIS,
President, American Medical Association of Vienna,
Vienna VIII, Schlösselgasse 28.

Queries and Minor Notes

ANONYMOUS COMMUNICATIONS and queries on postal cards will not be noticed. Every letter must contain the writer's name and address, but these will be omitted, on request.

HEMOPTYSIS

To the Editor:—From the study of two cases of hemoptysis I am inclined to the belief that hemorrhage from the lungs may occur without any distinct pathology, being brought on by severe constipation. The first patient I had under observation for over two years and the present patient for thirteen months. In neither have I been able to detect any signs of pulmonary consolidation, the health (except for the hemorrhages) has been excellent, both more than maintaining their weight, both negative to intradermal injections of Koch's tuberculin. The hemorrhages occur at various intervals ranging from six weeks to three months, and are always preceded by a period of severe constipation, and cease as soon as the bowels are well cleaned out.

Neither patient has any cardiac disturbance, and having seen both during an attack, I am sure the bleeding is from the lungs and not from the stomach.

I would like to know if others have had similar cases or if any other suggestion as to the cause of the hemorrhages can be given.

S. SALZMAN, M.D., Toledo, Ohio.

ANSWER.—References are found in the literature to a number of peculiar cases of hemoptysis, but the titles do not enable us to say whether constipation was a prominent symptom in them. It is easy to understand how intestinal changes might raise the blood-pressure in the venous system so as to provoke hemorrhage in persons specially predisposed. However, it is well to keep in mind other possible causes.

Recurrent hemoptysis in subjects of chronic arthritis has been observed.

Troublesome bleeding from the lungs may occur in diseases accompanied by hemorrhages elsewhere or by hemorrhagic tendencies, as scurvy, leukemia or purpura.

The following additional causes are to be considered: Aneurysm, arteriosclerosis and distomiasis. Distomiasis is a rare condition in this country, but apparently more prevalent than formerly, because of infection by *Paragonimus westermanii*. The symptoms have been summarized by Stiles and Hassell (*Public Health Reports*, 1900, xv).

STATES RECIPROCATING WITH NEW YORK

To the Editor:—I hold a New York state license, 1911. Kindly inform me with what states I may reciprocate. J. H.

ANSWER.—New York has established reciprocal relations with Delaware, Indiana, Michigan, New Jersey, Ohio, Utah, Virginia and Wisconsin.

Preventogram.—The common drinking cup, the common towel or the common pencil, are common causes of diseases and not uncommonly hasten the common end of mankind.—Pittsburgh *City's Health*.

Medical Education and State Boards of Registration

COMING EXAMINATIONS

KANSAS: Topeka, Feb. 9-11, 1915. Sec., Dr. H. A. Dykes, Lebanon.
NEW YORK: Albany, Buffalo, New York, Syracuse, Jan. 26-29, 1915. Mr. H. H. Horner, Chief, Examination Division, State Education Bldg., Albany.

New Entrance Requirements for Harvard Medical School

On recommendation of the faculty of medicine, the Harvard Corporation has recently changed the requirements for admission to the Medical School which are now as follows:

Graduates in arts or science of approved colleges or scientific schools who can furnish evidence (a) that they have such knowledge of physics, biology, general chemistry, and organic chemistry, as may be obtained from one year's course in each of these subjects as given in approved colleges and scientific schools (in organic chemistry, half courses of good grade may be accepted); (b) that they have a reading knowledge of French or German.

Students who have completed two years' work in a college or scientific school of high rank, provided they present certificates (a) that they have stood in the upper third of their class, (b) that one year's course has been taken in physics, general chemistry, and organic chemistry, and (c) that they have a reading knowledge of German or French.

This new statement of the entrance requirements differs but slightly from those published in last year's catalogue. The change has not lowered the entrance requirements but has decidedly improved them, since hereafter, every student admitted, whether he holds a collegiate degree or has completed the two years of collegiate work, must have completed courses in the specified sciences and have a reading knowledge of French or German. Formerly degree men were admitted without these specified courses.

Another measure was adopted giving the administrative board the right to refuse applicants if the number seeking admission is too large to be effectively taught. In this connection, it is interesting to note that already three medical schools have limited the number of students to be enrolled: Johns Hopkins admits on the average 90 students in each class; Rush Medical College admits only 100 students each in the classes of the first and second years and 120 students each in the classes of the third and fourth years, and Leland Stanford, Jr., University School of Medicine has limited its enrollment to 25 students in each class. There are other medical colleges with more limited equipment and clinical material which apparently have not appreciated the fact that much better work might be done with smaller classes.

Oregon July Report

Dr. L. H. Hamilton, secretary of the Oregon State Board of Medical Examiners, reports the practical and written examination held at Portland, July 7-9, 1914. The total number of subjects examined in was 15; total number of questions asked, 108; percentage required to pass, 75. The total number of candidates examined was 73, of whom 44 passed, including 9 osteopaths, and 29 failed, including 11 osteopaths and 6 non-graduates. The following colleges were represented:

College	PASSED	Year Grad.	Total No. Licensed
College of Physicians and Surgeons, Los Angeles		(1914)	1
Hahnemann Medical College of the Pacific		(1914)	1
Bennett College of Eclectic Medicine and Surgery		(1907)	1
Chicago College of Medicine and Surgery		(1908)	1
Chicago Homeopathic Medical College		(1904)	1
Rush Medical College		(1913)	1
University of Illinois		(1914)	1
Tulane University of Louisiana		(1908)	1
Johns Hopkins University		(1914)	2
Boston University		(1912)	1
University of Michigan, Dept. of Med. and Surg.		(1910)	1
University Medical College, Kansas City		(1913)	1
College of Phys. and Surgs., in the City of N. Y.		(1896)	1
Columbia University	(1912)	(1914)	2

University and Bellevue Hospital Medical College	(1904)	1
University of Oregon	(1910,1) (1913,1) (1914,8)	10
Willamette University	(1912,2) (1913,1)	3
Jefferson Medical College	(1911)	1
Medico-Chirurgical College of Philadelphia	(1913)	1
Woman's Medical College of Pennsylvania	(1888) (1901)	2
McGill University	(1896)	1

FAILED

California Eclectic Medical College	(1914)	1
College of Phys. and Surgs., San Francisco	(1910) (1914)	2
Pacific Medical College*	(1914)	1
Rush Medical College	(1903)	1
Kentucky School of Medicine	(1907)	2
Louisville and Hospital Medical College	(1908)	1
St. Louis University	(1906) (1908)	2
University of Oregon	(1914)	1
Willamette University	(1905)	1
Non-graduates		6

* This is a new institution located at Los Angeles which grants as much as three years of advanced standing for work done in osteopathic colleges, and is, therefore, classified among such schools.

Arizona October Report

Dr. John Wix Thomas, secretary of the Board of Medical Examiners of Arizona, reports the written examination held at Phoenix, Oct. 6-7, 1914. The total number of subjects examined in was 10; total number of questions asked, 100; percentage required to pass, 75. The total number of candidates examined was 10, of whom 6 passed, including 3 osteopaths, and 4 failed, including 1 osteopath. The following colleges were represented:

PASSED	Year Grad.	Per Cent.
College of Physicians and Surgeons, Los Angeles	(1914)	84.4
Chicago College of Medicine and Surgery	(1914)	82.5
Cleveland College of Physicians and Surgeons	(1898)	90.9

FAILED

Rush Medical College	(1883)	62.3
Sioux City College of Medicine	(1896)	56.2
Pulte Medical College	(1878)	61

Arkansas Eclectic November Report

Dr. C. E. Laws, secretary of the Arkansas Eclectic Medical Board, reports the oral and written examination held at Little Rock, Nov. 10-11, 1914. The total number of subjects examined in was 12; total number of questions asked, 120; percentage required to pass, 75. The total number of candidates examined was 5, of whom 4 passed and 1 failed. The following colleges were represented:

PASSED	Year Grad.	Per Cent.
Georgia College of Eclectic Medicine and Surgery	(1910)	83.7
American Medical College	(1909)	81.1
Eclectic Medical University, Kansas City	(1914)	89.1
Eclectic Medical College, Cincinnati	(1912)	90

FAILED

Bennett Medical College	(1910)	67.2

Delaware December Report

Dr. H. W. Briggs, secretary of the Medical Council of Delaware, reports the written examination held at Dover and Wilmington, Dec. 8-10, 1914. The total number of subjects examined in was 10; total number of questions asked, 100; percentage required to pass, 75. The total number of candidates examined was 8, all of whom passed. One candidate was licensed through reciprocity. The following colleges were represented:

PASSED	Year Grad.	Per Cent.
Georgetown University	(1913)	79.6
Howard University	(1913)	87.8
Harvard University	(1914)	85.1
Cornell University	(1913)	78.2
New York Homeo. Med. Coll. and Flower Hospital	(1912) (1913)	90.2, 91.6.
Hahnemann Medical College and Hosp., Philadelphia	(1914)	88.4
Medico-Chirurgical College of Philadelphia	(1914)	84.4

LICENSED THROUGH RECIPROCITY

	Year Grad.	Reciprocity with
George Washington University	(1907)	Dist. Colum.

Book Notices

THE OCCUPATIONAL DISEASES; THEIR CAUSATION, SYMPTOMS, TREATMENT AND PREVENTION. By W. Gilman Thompson, M.D., Professor of Medicine, Cornell University Medical College in New York City. Cloth. Price, $6 net. Pp. 724, with 118 illustrations. New York: D. Appleton & Co., 1914.

This book, the first to appear in this country on occupational diseases, is a much needed contribution. The author goes at length into the various phases of the problems and gives a thoroughgoing description of the hazards in the various trades. In the first parts there is a general discussion of the history, etiology and pathology of the commoner trade ailments, and general measures for preventing and treating them. The poisonous substances are then taken up in the order of toxic metals and their compounds, toxic gases, vapors and fumes, toxic fluids and irritant dusts, and in dealing with these the writer has some very practical suggestions as to how intoxication may be lessened. Under the heading "Germs" he includes uncinariasis, with anthrax, foot-and-mouth disease, glanders and septicemia. After dealing with the troubles to which they lay workmen liable, he goes on to the diseases due to the environment in which men work, air pressure, temperature variations, evil effects of light rays and Roentgen rays, and electric shock. There is also a discussion of the occupational diseases as they affect various organs—the blood, nerves, eyes, skin, etc.; something on the influence of alcohol, syphilis and tobacco, and then a grouping of diseases by industries other than those already dealt with. In the appendixes the main hazards and their causes are given in tabular form, and the main provisions of existing laws governing such hazards in the states. Altogether there is the material for an excellent work; but there are so many indications of carelessness in thought and diction that the book falls far short of the front rank.

PASTEUR AND AFTER PASTEUR. By Stephen Paget, F.R.C.S. Cloth. Price 3 shillings 6 pence. Pp. 152, with 8 illustrations. London: Adam and Charles Black, 1914.

This is one of the series of medical history manuals. The selection of Mr. Stephen Paget as the author was most fortunate. His long service as secretary of the Research Defense Society of England, his thorough familiarity with the scientific foundation of medicine, and his extensive writings on scientific subjects, both technical and popular, qualify him admirably for the task of preparing a popular book on Pasteur, his work and its results. The basis of the biographic portion is Radot's well-known "Life of Pasteur." In addition to a sketch of the man and his work, the development of bacteriology and preventive medicine after Pasteur's time is discussed, including the work of Lister, Koch, Roux, Haffkine, Kitasato, Yersin and others. The book is an excellent little manual on the development of modern preventive medicine. It can be read with profit by every physician, and can be recommended without hesitation to laymen desiring information on this subject.

ANOCI-ASSOCIATION. By George W. Crile, M.D., Professor of Surgery, School of Medicine, Western Reserve University, and William E. Lower, M.D., Associate Professor of Genito-Urinary Surgery, School of Medicine, Western Reserve University. Edited by Amy F. Rowland. Cloth. Price, $3 net. Pp. 259, with 60 illustrations. Philadelphia: W. B. Saunders Company, 1914.

As a result of the several articles which have appeared during the past few years from the pen of one of the authors of this book, the term "anoci-association" has come to have a definite meaning in surgical practice, a meaning, however, which, judging from some of the criticisms of it, is frequently misunderstood. The idea seems to be prevalent that anoci-association refers to a particular method, or a certain technic in doing a particular thing against which the criticism is directed. As a matter of fact, anoci-association consists in the principles of, or if one may use such a comprehensive term, the philosophy of harmful stimuli; their nature; their effects on the living organism; the manner in which the organism reacts to them; methods of preventing

harmful effects, etc. Whether or not one agrees with all of the author's methods is immaterial so long as one recognizes the basic principles; nor need one agree with the author in all of his interpretations, yet it seems scarcely possible for one to follow all of his arguments without being convinced of the underlying truths of anoci-association. It is more than likely that others may, in fact do, differ in points of technic yet accomplish the same result; but, as already stated, it is not a question of points of technic but of principles, and there can be no doubt that the charming enthusiasm of the author in recognizing and promulgating these principles has accomplished and will yet accomplish much good in the manner in which operations are conducted.

PRACTICAL PEDIATRICS. A Modern Clinical Guide in the Diseases of Infants and Children for the Family Physician. By James H. McKee, M.D., Professor of Pediatrics in the Medical Department of Temple University, and William H. Wells, M.D., Assistant Professor of Obstetrics, Jefferson Medical College, Philadelphia. An Appendix on Development and Its Anomalies by John Madison Taylor, A.M., M.D., Associate Professor of Non-Pharmaceutic Therapeutics, Medical Department, Temple University, Philadelphia. Two Volumes. Cloth. Price, $12 net. Pp. 1182, with 386 illustrations. Philadelphia: P. Blakiston's Son & Co., 1914.

This work, taken as a whole, makes at first a rather favorable impression, and on closer analysis falls short of what one can expect of a treatise on this subject to-day. Textbooks are not expected to include the very latest current literature, but only that which has been generally accepted and corroborated. The relationship of the thymus to the development of the intellectual faculties is hardly the last word in the physiology of that organ. The same is true of the probable relationship of the pancreas to carbohydrate metabolism. Many of the articles seem diffuse and do not give a clear conception of the diseased conditions. This is especially true of the one on cystitis. Stone is certainly not the commonest cause of vesical inflammation. The chapter on disorders of metabolism dependent on the organic constituents of the food consists of exactly one page; as far as the infant is concerned, four paragraphs. The important contributions of Czerny and Keller, Finkelstein and others are taken care of in one sentence, and the impression is given that there is no such thing as a disturbance due to wrong feeding. Albumin milk is not given in the index, nor could it be located anywhere in the text. To sum up, the work, in certain essentials, falls far short of the standard set by numerous works in the English language.

ALLGEMEINE CHIRURGIE. Von Dr. Med. Ph. Bockenheimer, Universitätsprofessor für Chirurgie an der Universität in Berlin. I. Teil: Chirurgische Operationslehre. II. Teil: Chirurgische Erkrankungen mit Ausnahme der Geschwülste und Zysten. III. Teil: Geschwülste und Zysten. Paper. Price, 30 marks. Pp. 855, with 1,034 illustrations. Leipzig: Werner Klinkhardt, 1914.

The work is divided into three parts: Part 1 on surgical operations, Part 2 on surgical diseases, exclusive of tumors and cysts, and Part 3 on tumors and cysts. Part 1 is general in character, and treats of operative technic rather than of particular operations. It also contains chapters on wound healing, transplantation of tissue, bandaging, etc. The text is short and to the point, and most of the illustrations are quite satisfactory. Some, however, are out of date: we do not expect, to-day, to see operations on the skull shown with the hair on the scalp and the surgeon's hands bare with neat cuffs on the wrists; and in operations about the axilla, the parts are supposed to be shaved, and not left covered with hair. Part 2 deals with general subjects, such as the various forms of infections, both acute and chronic, injuries, fractures, diseases of the bone, joints, etc. Of this part, those chapters on the diseases of the bones are the most interesting; there are 440 pages, with 498 illustrations, and forty colored plates, from which it necessarily follows that the text must be quite brief; in fact, too brief in places to be entirely satisfactory. Part 3, of 160 pages on tumors, contains nothing especially new. The illustrations, however, are very good, and show many interesting examples of the various growths. The colored plates are particularly fine, showing both macroscopic and microscopic structure.

Miscellany

ALBERT VAN GEHUCHTEN—AN APPRECIATION

A man as charming as he was intellectual, and as beloved as he was famous, was Albert van Gehuchten, professor of the anatomy, pathology and treatment of diseases of the nervous system in the University of Louvain. His sudden death (Dec. 9, 1914) has deprived the world of one of the most skilful investigators and brilliant exponents of biologic science.

In deploring the losses of the rich past in the destruction of the library of Louvain, not many realized at first the even more significant losses to the future. Professor van Gehuchten's city as well as his country home was burned, and with them all the manuscripts containing the records of his research work during the last ten years—research work along the lines of that, which already published, had made such advances in the science of neurology.

Professor van Gehuchten was enthusiastically received in Cambridge, and a position which happened to be vacant was given to him, and through the efforts of Sir William Osler and others, a contribution from the Rockefeller fund was placed at his disposal. He was given the use of the laboratory of the Research Hospital, which was installed in a small separate building, the hospital being occupied by wounded soldiers. There, with a brave and hopeful spirit, he set himself to the task of reproducing the work that was destroyed; and he quickly attracted to him an enthusiastic circle of men who were quickened by his interest and brilliant methods of work.

In spite of his determination, it was a painful struggle against despair which he with so many of his fellow countrymen were obliged to undergo, and he was just rallying to the acceptance of the new condition, and apparently regaining his health and poise, when a sudden attack of pain called his friends into consultation, and a laparotomy was performed, which successfully released a volvulus. To all appearance he was making a good recovery, and was able to carry on his correspondence and see a few friends, when a sharp pain in the region of his heart heralded the end.

Professor van Gehuchten died December 9, in his fifty-fourth year, in Cambridge, the university of refuge to so many distinguished professors of Louvain.

The whole medical world grieves the loss of this most skilful investigator and brilliant exponent of biology.

Dec. 1, 1912, the University of Louvain celebrated Professor van Gehuchten's jubilee of twenty-five years' teaching at that historic seat of learning.

Dr. Meeus, in his presidential address, said, "The work of M. le Professeur van Gehuchten is so stupendous, that when I was asked to preside on the occasion of his jubilee I was afraid that I should not in any sense be able to do justice to it."

He then traced a series of discoveries and methods, which from his first publication on structural muscle cells, through his study of the nervous system, showed him to be one of the greatest masters in the science of neurology. "Our present-day conception of the neuron was placed by him on an unassailable foundation, namely, that the neuron comprises a cellular body, protoplasmic prolongations for cellulipetal transmission, and an axis cylinder prolongation for cellulifugal transmission, both kinds of prolongation having a free termination, the nerve conduction from one neuron to the other being effected by the contiguity of the end ramifications of the axis cylinder of one neuron to the protoplasmic prolongations of the neighboring neuron."

He established methods of methylene blue staining, which he found of greater value in the examination of the more intimate nerve structures in their modification, than the coarser methods of Golgi. His investigations of the phenomena of chromatolysis formed the basis on which he rested his study of the true origin of motor nerves, and later by the discovery of a new method, based on the phenomenon of direct wallerian degeneration, he gave an exactitude to the

result of his studies of the intracerebral spinal courses and of the motor nerves and certain central nerve tracts never hitherto attained. He showed that if, instead of dissecting a nerve, it was torn out, degeneration followed not only of the peripheral but also of the central portion of the nerve, such central degeneration being not retrogressive, but descending, like that of the peripheral portion, this being due not to the direct separation of the nerve itself, but to the atrophy of the cells from which it originated and was fatally injured by this violent traumatism.

Dr. F. E. Batten, writing in the *British Medical Journal* an appreciation of this remarkable man's work, says:

"Professor van Gehuchten was a teacher of great capacity, esteemed by his students as much for the high conception he had of his professional duties as for the pains he took to communicate his instruction in an interesting and sympathetic manner, illustrating his points step by step by drawings on the blackboard, demonstrations on the human body, and even by cinematograph films. In his work, van Gehuchten was not only a clinician of great eminence, determining with mathematical exactitude the seat of lesions of the central nervous system, but a bold innovator in the domain of the therapeutics, and especially the surgery of the nervous system. He obtained unlooked-for results in the surgical treatment of cerebral and medullary tumors; in obstinate neuralgia of the trigeminal nerve he proposed excision of the nerve branches to bring about atrophy of the cells from which they originate, and hence destruction of the nerve itself and elimination of all pain; he modified Foerster's operation, and successfully proposed the less complicated method of resection of the internal posterior root filaments instead of the posterior roots.

These clinical and therapeutic triumphs proved to those who were still in doubt, that absolutely pure and disinterested scientific research must finally lead to the elucidation of the most obscure pathologic problems, and thus form the indispensable foundation of medical science."

Regulation of the Practice of Chiropody

Attempts have been numerous in recent years on the part of many of the minor branches of medicine to obtain legislation permitting their followers to assume the title of "doctor," and to provide for educational standards much lower than apply to practitioners of medicine. In contrast the resolutions adopted at a recent meeting of the Chiropody Society of Pennsylvania are encouraging. It is apparent that the followers of this minor branch of medicine are not asking for the privilege of assuming an unearned title of "doctor," but, on the contrary, believe that the regulation of the practice of that branch should be placed in the hands of those who have to do with the licensing of physicians. The resolutions stated in substance that no branch of medicine or surgery is so unimportant as not to merit the care and control of the medical boards in the various states; that the care of the human foot in a scientific manner should be a part of the teaching and practice of medical colleges; that until such time as the medical colleges establish a department of chiropody and furnish an education sufficient for the practicing of chiropody, that schools of chiropody maintaining a proper academic and professional standard should be recognized by the boards of licensure of the various states, and that the practice of chiropody should be regulated by law in the various states.

The Eyes and Vision of Fishes

W. H. Bates, in the *Bulletin of the New York Zoological Society* for November, reports an experimental study undertaken to find out the cause of near-sight, the subjects of the experiments being fishes.

Fishes' eyes compared with human eyes are relatively large, the length of the eye of a fish being ordinarily about one-twentieth of its length, while the length of the eyeball of a man is from a sixtieth to a seventieth of his height. The eyes of fishes are in constant use except when they are asleep. Most fishes have no eyelids, their eyes being protected from injury by a shiny material, or by a thick transparent skin. The puffer, or swellfish, which habitually burrows in sand at the bottom of the water, has eyelids which cover the eyeballs when closed, the lower eyelid being larger than the upper. The iris is usually yellow in fish, but sometimes of other colors. The pupil, while usually round, as in man, was found in some fishes to be pear-shaped, triangular or oval. The size of the pupil apparently does not change much on exposure to bright light, or as rapidly as does the pupil of most air-breathing animals.

In the experimental work the eyes of normal fishes were first examined with the retinoscope; then by electrical stimulation the focus was changed from distant to near objects. The superior oblique muscle was next cut, after which electrical stimulation produced no change in focus or accommodation.

After the muscle had been sutured, the focus again responded to electrical stimulation. Electrical stimulation after removal of the lens produced as much accommodation as before. It was found that, contrary to statements sometimes made, the eyes of fishes when swimming were focused for distant vision. Fishes are able to focus their eyes on near objects (as close as 4 inches) by the action of the superior and inferior oblique muscles; they have no ciliary muscles. It was found possible by operation on the oblique muscles to make the fish near-sighted, far-sighted or astigmatic.

Medicolegal

Delay in Delivery of Dog's Head to Pasteur Institute

(Miller vs. Southern Express Co. (S. C.), 83 S. E. R. 449)

The Supreme Court of South Carolina affirms judgments against the express company for damages for delay in the delivery of a dog's head directed to the Pasteur Institute, Columbia, S. C. The court says that the dog, having bitten the plaintiff's children, was put into a box and kept there for several days until it died. The dog had acted peculiarly, and, when it died, the plaintiff, suspecting hydrophobia, had its head cut off, put into a box and sent to the institute. That was on Monday morning. The box was labeled "mad-dog head," and the express agent informed that it was being sent to Columbia for examination, to see whether the dog was really mad or not.

The evidence tended to show that the box arrived in Columbia on Monday evening and was carried to the institute, but that was closed. It was carried back early Tuesday morning, but the institute had not opened. Later it was carried back and delivered to a carpenter working in the building, but not for the institute. The box was put in the hallway and the officials of the institute did not get it until Wednesday. By that time the head was so badly decomposed that an examination was not made for the reason that in the judgment of the officials it was too late to discover the presence of hydrophobia. The plaintiff claimed on the trial that, as a result of the delay in delivery, he was put to expense and was forced to give, and his children to take, the Pasteur treatment for hydrophobia. The trial resulted in verdicts and judgments for the father and his children in varying amounts not stated in the court's opinion overruling the defendant's exception and affirming such judgments.

Liability for Loss of Life in Burning of Sanatorium

(Green vs. Biggs (N. C.), 83 S. E. R. 553)

The Supreme Court of North Carolina affirms a judgment for damages for the death of a patient in the defendant's sanatorium, which was burned. The court says the principle seems to be generally recognized that a private charitable institution, which has exercised due care in the selection of its employees, cannot be held liable for injuries resulting

from their negligence, and the rule is not affected by the fact that some patients or beneficiaries of the institution contribute toward the expense of their care, where the amounts so received are not devoted to private gain, but more effectually to carry out the purposes of the charity. The rule is otherwise where fees are charged with the expectation and hope of securing gain and profit, and the proprietors of institutions of this class are held to the duty of ordinary care in the treatment and protection of those intrusted to them, and are responsible for injuries resulting from failure to perform this duty. The defendant was the proprietor of a private institution, maintained for gain and profit, and the sufficiency of the complaint depended, therefore, on whether it alleged actionable negligence. The complaint alleged that the patient in question was received into the institution of the defendant for hire; that he was old and helpless; that he was placed in an upper room of a wooden building; that the windows of his room were closed, and he could not open them; that the only exit from his room was on the hall; that there was no attendant near him; that the defendant maintained a fire in a furnace under the house night and day; that he had a watchman employed whose duty it was to watch the fires and protect the premises; that the defendant permitted the watchman to leave the premises and put no one in his place; that the fire which caused the death started at or near the furnace, and there was no one present to extinguish it or give the alarm. With these facts admitted, as they were by a demurrer, the jury would have been warranted, on an issue submitted to them, in finding that the defendant did not exercise the care of a person of ordinary prudence, and that this was the cause of death. In passing on the complaint, the court must construe it liberally, and, when so considered and construed, it is of opinion that the complaint stated a cause of action.

Second Injury from Exercising

(Kelley vs. Lembeck & Betz Eagle Brewing Co. (N. J.), 92 Atl. R. 282)

The Supreme Court of New Jersey affirms a judgment for $3,750 in the plaintiff's favor for damages alleged to have been sustained by reason of a fracture of the patella caused by a defective cellar door owned by the defendant. The court says that the accident occurred January 28, and that the plaintiff was taken to a hospital where he remained until February 20, when he went home and put himself under the care of his own physician, who, according to the plaintiff's evidence, advised him after a time to do a little walking indoors. In May, while he was exercising under the instructions of his physician, he sustained a new fracture of the patella, presumably in the same place. Under the charge of the trial court he was allowed to recover for damages resulting from both fractures, if the jury should find that the proximate cause of both was the original negligence of the defendant. The defendant contended that the plaintiff was guilty of contributory negligence in undertaking to use the fractured bone before it had entirely healed, and requested a charge that the jury must not take into account any damages which were the proximate result of the second injury. This request was properly denied, because it required the court to take from the jury the questions whether the second injury was the proximate result of the original fall, and whether the plaintiff was guilty of contributory negligence in the respect just stated. This point, however, was for the jury in both aspects. There was evidence in the case that the plaintiff ought not to have left the hospital so soon, and should not have exercised, as he did. But the plaintiff swore that the hospital surgeon said that he could go, and that he waited another day before leaving. The plaintiff testified, also, that his own physician advised him to walk a little indoors. There was some testimony that the plaintiff was advised to consult a specialist, and did not do so; but it still remained a jury question whether he had used reasonable care in the selection of a physician and in following his instructions. If so, the defendant could not escape liability for a situation which, but for the original injury, never would have arisen.

Society Proceedings

SOUTHERN SURGICAL AND GYNECOLOGICAL ASSOCIATION

Twenty-Seventh Annual Meeting, held at Asheville, N. C., Dec. 15-17, 1914

The President, Dr. JOHN WESLEY LONG, Greensboro, N. C., in the Chair

Officers Elected

President, Dr. Bacon Saunders, Fort Worth, Tex.; vice-presidents, Drs. Thomas S. Cullen, Baltimore, and S. M. D. Clark, New Orleans; secretary, Dr. W. D. Haggard, Nashville. The next annual meeting will be held at Cincinnati.

Simplicity of Transfusion by Means of Kimpton-Brown Tube

DR. J. M. MASON, Birmingham, Ala.: On account of the simplicity of the technic, the certainty of results, and the safety with which the Kimpton-Brown method may be used in the hospital or the home of the patient, it is the most useful method of transfusion devised.

New Method of Lateral Anastomosis of Blood Vessels; Operation for Cure of Arteriovenous Aneurysms

DR. J. SHELTON HORSLEY, Richmond, Va.: I doubt the practical utility of reversal of the circulation. My experiments show that in reversal of the circulation by the end-to-end method the blood returns to the heart by anastomotic venous branches a short distance below the site of operation, and that the arterial blood in the reversed femoral vein never reaches the foot. If the circulation is to be reversed, however, it should always be done by lateral anastomosis and not by the end-to-end method. I have devised a clamp for lateral anastomosis of blood vessels. It is 5 inches in length, has delicate curved blades, and the handles are in an axis with an imaginary line drawn from the tip to the heel of the blades. This permits the handles to lie flat and they are out of the way during suturing. The forceps can also be used for temporary occlusion of blood vessels and for the cure of arteriovenous aneurysms. In a lateral anastomosis the vessels are clamped by two of these forceps and held together by two sutures near the end of the proposed anastomotic opening. The opening is made with scissors and a tractor suture is placed in the outer wall of each vessel but not tied. The suturing is done with a curved needle, the knot being on the outside. A continuous overhand stitch is used, beginning at the angle near the handles, and when the other angle has been reached, one of the tractor sutures in the outer wall is withdrawn and a tractor suture placed so as to unite both walls. This, when pulled on, everts the intima and makes the suturing easier. The thread is tied to the short end which is grasped in the hemostat when the first knot of the continuous suture is made. In using the forceps for arteriovenous aneurysm the vessels are first dissected down to the aneurysm, and first the artery, then the vein, is grasped by the forceps near their point of communication. The communication between them is then divided and the opening sutured. This makes the operation easier even when a tourniquet is applied, but it should be especially valuable where no tourniquet can be used, as in the upper femoral region.

DISCUSSION

DR. E. P. RICHARDSON, Boston: I have used the K-B method in a number of cases and find it extremely simple and efficient. There has been no trouble from the clotting of blood in the tube during the transfer from the donor to the recipient.

DR. JOHN D. S. DAVIS, Birmingham: One advantage of the Kimpton-Brown tube is that we can estimate the amount of blood transfused.

DR. WILLIAM R. JACKSON, Mobile: The only criticism I have to make on the use of this tube is the difficulty of the technic. When you take the tube out and put another one in the vein a blood clot is liable to form in the vein.

DR. OSCAR H. ELBRECHT, St. Louis: I have done a number of direct transfusions after the method of Crile on dogs and on four human subjects, and I have been unable to tell whether I got 2 ounces or 2 pints in any of those patients.

DR. CHARLES H. MAYO, Rochester, Minn.: In regard to arteriovenous aneurysm, frequently the opening between the artery and vein is only as large as the artery, and whenever it is found that it is not larger than the artery, if a permanent ligature is put around the anastomosis and drawn tight or snug, it will work satisfactorily, although this is contrary to the teachings of the old text books. I have tried it on the popliteal artery and it has worked admirably.

Modification of Lane's Plates

DR. H. STUART MACLEAN, Richmond, Va.: When a Lane plate has first been properly and firmly applied it is calculated to maintain from the outset close, accurate approximation of the fractured ends. It is this rigidity which tends to bring about delayed or non-union. In the process of healing of a transverse fracture of a long bone the natural result is a slight degree of shortening which is explained by absorption of bone tissue from both the fractured ends. It follows then that with the rigidly and accurately applied Lane plate the attrition and absorption in the fractured ends give a degree of actual separation of the ends in from two to four weeks which is as firmly maintained as is the accurate approximation when the plate is first applied. In order to overcome this difficulty I have had the plates made with an oblong opening in one end instead of the usual round opening for the screw. When the plate is applied the screws are placed at the distal end of the oblong opening, and as attrition and absorption occur the action of the muscles along the line of fracture will cause the approximation to be continued by the slipping of the screws in the oblong slot. Roentgenograms show that the screws do slip in this slot from one-third to the entire length of the opening.

DISCUSSION

DR. HENRY O. MARCY, Boston: The less we damage the tissues in treating a fracture, the easier we bring the parts in coaptation and fixation, the safer and surer the result, and the posterior splint which has been developed during twenty years gives fixation of the greatest possible value in the application of mechanical means for the reduction and retention of fractured bones.

DR. J. M. MASON, Birmingham: There are four points which should govern us in deciding in any individual fracture whether or not it should be treated by the open method. First, any fracture, where coaptation is necessary, and where we are unable to coapt the fragments, should be treated by the open operation. Second, we ought to consider the probable functional result in a given case without perfect reduction. In many instances, especially in women, in fractures about the shoulders and arms and exposed parts of the body, they ought to be informed of the absolute inevitableness of putting a screw in any fracture we are going to open. Then we must consider the possibility of sepsis and non-union.

DR. H. H. TROUT, Norfolk, Va.: We had a series of roentgenograms after Lane plate cases which disclosed a bony deposit opposite the plate.

DR. W. B. COLEY, New York City: The pendulum has swung too far in the direction of the operative treatment of fractures.

DR. W. D. HAGGARD, Nashville: Some reference ought to be made to the bone inlay, because it is much more easily applied than the peg or dowel.

DR. OSCAR H. ELBRECHT, St. Louis: Ivory plates are absorbed within ten months. The fixation by them is firm and they do not have the objection of the screw, because there is decided traction of one or more screws, thereby producing slight tissue necrosis from pressure of the screw itself.

DR. BATTLE MALONE, Memphis: In many old cases of non-union, the ones in which we usually make use of transplants, there is such a degree of rarefying osteitis that the bone tissue at that point is not adaptable or suitable for transplantation. It is more preferable to take a transplant from some other part of the body.

Uterine Prolapse

DR. CHARLES H. MAYO, Rochester: With retroversion and descent, difficult to replace because of probable associated pelvic lesions or other abdominal complaint, an intra-abdominal operation should be made on the round ligaments. If, as rarely occurs, the cervix remains too far forward, the uterosacral ligaments should also be shortened to bring the uterus to anteversion. The interposition type of operation is efficient in the relief of uterine prolapse associated with extensive cystocele. The best results are secured in women having a firm uterus, which usually means an age limit within the forties. This operation relieves cystocele and descent of the first and second degrees of prolapse. In the third or fourth degrees of complete prolapse in women in the fifties, with a soft degenerating uterus undergoing rapid atrophy and in whom the torsion of the ligaments in anteversion still permits the uterus to be brought out of the body, the operation will undoubtedly fail of relief and another method should be substituted. The modified Kocher operation is occasionally made on women in the forties, in which case the tubes are divided, but it is usually reserved for women well past the change of life with atrophied uteri. For a large group of cases, or the third and fourth degrees of prolapse in patients between 45 and 65 years of age, often with atrophy of the uterus and distention of the vaginal outlet, neither the interposition nor the Kocher types of operation are indicated. In these cases the following is an effectual method of securing relief:

The cervix is grasped with two pairs of volsellum forceps and drawn well out of the vagina. A pear-shaped incision is now made with its apex 1½ inches below the external urinary meatus. It passes down each side of the cystocele and around the cervix. The sides of the incision are grasped and the vaginal wall readily separated from the bladder by blunt gauze dissection. The apex of the vaginal flap attached to the anterior lip of the cervix is turned down and the bladder rapidly separated by gauze dissection from the front of the uterus. As soon as the peritoneal fold is reached, it is incised and divided laterally. The blunt gauze dissection now separates the posterior vaginal wall from the uterus at the side and on to the broad ligaments. The sharp fork retractors are now used to draw the fundus of the uterus out of the incision as in an ordinary hysterectomy and the cervix is restored within the vagina. The broad ligaments are fully spread out on each side. Unless the ovaries are diseased they are not removed. A heavy hysterectomy forceps with long blades now grasps each broad ligament. The uterus is divided a half inch from the forceps and two more pairs are applied, one on each side, with their tips touching the culdesac behind the cervix. The uterus is then cut entirely away.

If there is any tendency of the sigmoid or omentum to prolapse, it is held back by a long pad of gauze inserted into the peritoneal opening. The pairs of forceps, two on each side, are now approximated laterally and a running mattress suture of chromic catgut is applied which passes back and forth behind the forceps completely through both ligaments at such a distance as to tighten the broad ligaments. From 1¼ to 1½ inches approximation of these ligaments is secured. The method of suture is applied so as to interlock and prevent the inward slipping of any vessels. When the suturing reaches the round ligament side it is caught into the flap anteriorly where the bladder has been separated from the interior vaginal wall. This suturing extends backward on each side from this point, catching into the broad ligaments, and then on each side into the angle of the depth of the dissection, thus compelling the bladder to rest on the broad ligaments. The loose ends of the exposed broad ligaments are now approximated by a running bottonhole stitch, extending back to the perineal position and the sides of the vaginal mucosal flaps, and closed by a running catgut suture up and back in a submucous manner. No sutures are exposed.

Radium Treatment of Fibroid Tumors

DR. HOWARD A. KELLY, Baltimore: The thirty-six patients from 30 to 67 years old were treated with radium (gamma) rays. The tumors were pedunculated, as well as interstitial and submucous. With one exception, radium has either caused the tumor to disappear or has so far reduced its size as to render it innocuous. In every case subjected to an intra-uterine radiation the hemorrhage was controlled, and wherever it was desirable amenorrhea has been produced. The treatments, calling for from 300 to 500 mg. of radium element, only lasted a few hours, and, as a rule, did not have to be repeated. Furthermore, they were without risk. Such a treatment is preeminently adapted to tumors in young women, in whom menstruation will sometimes be conserved, and in hemorrhage cases, especially when profound anemia is found. Radium treatment does not preclude, and in no wise complicates, a surgical operation if it is thought best to do one later.

Large Hair Cast of Stomach Successfully Removed by Gastrotomy

DR. RUDOLPH MATAS, New Orleans: A hairball weighing approximately 967 grams was removed from the stomach of a girl 19 years of age. It was shaped like an inverted gourd, and was molded to the contour of the stomach. In the dry state, it measured 18 inches in its longest diameter (along its convexity); 10¼ inches in its greatest circumference; 8¼ inches around its middle portion, and 8⅛ inches in its narrowest circumference. It consisted of a mass of matted black hair which, when dry, was felted, and gave the appearance of the hair of a wild animal. Mixed with the hair were particles of earth and vegetable food stuffs, which had gravitated to the center of the mass. The mass not only filled the stomach in its entirety, but was grasped tightly by its walls in many places. An incision 6½ inches along the anterior surface of the organ was required to permit its extraction. When removed from the stomach, it was covered with a thick slimy coat of extreme foulness. The only space for the passage of food was a narrow interspace between the mass and the lesser curvature, were fluids and semi-solid foods could be forced from the cardia to the pylorus.

Cancer of Prostate

DR. E. S. JUDD, Rochester, Minn.: In my series of 878 prostatectomies, there were 93 cancers. The youngest of these patients was 51 years, the oldest 82. In addition to these, 84 cases were diagnosed cancer but the patients were not operated on because too far advanced. In many cases the symptoms of early cancer of the prostate cannot be differentiated from adenomatous hypertrophy. Pain associated with cancer is usually more constant and more marked in the region of the prostate and is not necessarily associated with micturition. Frequency of urination is also a prominent symptom and usually one of the first to appear. Hematuria was noted in 21.9 per cent. of the cases and was a comparatively late symptom. The specific gravity of the urine was unusually low, in many instances ranging from 1.002 to 1.005. A study of the specimens removed at operation showed that in about 75 per cent. cancer was associated with hypertrophy and in the remaining 25 per cent. cancer occurred in the prostates in which evidence of hypertrophy could not be found. The benignly hypertrophied gland in some of these cases is quite as readily enucleated as in the ordinary case and unless the posterior segment is enlarged the malignant process may easily be overlooked. If the hypertrophied part is more firmly attached posteriorly or shells out with difficulty, there is always suspicion of cancer. Patients who are incurable but fairly comfortable, either with or without catheter, should not be operated on, though certain of those who have not used catheters should be advised to do so, since they may be made more comfortable by its use. In many cases the obstruction to urination is due to a benign hypertrophy. Removing the obstruction and also a part of the cancer will entirely relieve the patients for a time and they will be more comfortable than with any other procedure.

Eighty-two of the 93 patients operated on have been traced. Of these 8 have lived more than 3 years; 12 more than 2 years; 13 more than 1 year; 24 died within the first 6 months; 5 died, date unknown.

Patients still living after 6 months, 3; after 1 year, 7; after 2 years, 4; after 3 years, 3; after 4 years, 2; after 9 years, 1.

The patient who is living and free from symptoms nine years after the operation had a very small cancerous nodule removed. Many of the patients living at the present time are entirely free from symptoms. Three who were operated on within the year, yet more than six months ago, are well. In the cases of recurrence, hematuria was one of the first evidences of the recurrence. Difficulty of urination was also an early symptom and became rapidly marked in a number of cases, necessitating suprapubic cystotomy. Several patients lived more than three years without evidence of trouble, when there was a return of all of their symptoms.

(To be continued)

Current Medical Literature

AMERICAN

Titles marked with an asterisk (*) are abstracted below.

American Journal of Diseases of Children, Chicago

January, IX, No. 1, pp. 1-80

1 Four Years of Clinical and Bacteriologic Experience with Meningitis in New York. P. L. DuBois and J. B. Neal, New York.
2 *Lange Gold Chlorid Reaction on Cerebrospinal Fluid of Infants and Young Children. C. G. Grulee and A. M. Moody, Chicago.
3 Acidosis with Auto-Intoxication in Infants and Children. C. R. Metcalf, Concord, N. H.
4 Respiration Incubator for Energy Metabolism of Infants. J. R. Murlin, New York.
5 *Intravenous Injection of Diphtheria Antitoxin in Children. E. H. Schorer, Kansas City, Mo.
6 Sugar-Content of Blood in Childhood. M. H. Bass, New York.
7 Pocket Baby Scale. C. R. Spicer, Chicago.

2. **Colloidal Gold Reaction.**—Summing up the gold chlorid reaction as it occurs in congenital syphilis, Grulee and Moody state: There are two types of reaction which occur in cases of congenital syphilis; one in which the height of the reaction is obtained in the dilutions of 1:40 and 1:80; in higher dilutions there is a distinct tendency to less reaction, and this reaction never continues past the dilutions of 1:640, and infrequently past the dilutions of 1:160. The second reaction approaches closely that of paretic dementia and needs further investigation before it can be properly interpreted. In five cases of tuberculous meningitis the reaction was most marked in the dilutions of 1:160 and 1:320. In two the reaction was greatest in dilutions of 1:640 and 1:1,280; in one at 1:40 and 1:80. In one case the diagnosis of miliary tuberculosis with tuberculosis of the meninges was confirmed at necropsy.

In the cases of congenital syphilis included in this report the cerebrospinal fluid reacted to the colloidal gold chlorid solution always in the lower dilutions, and with a marked degree of regularity strongest in the dilutions of 1:40 and 1:80. In a small group of cases of congenital syphilis the reaction is similar to that of paretic dementia. The reaction as obtained in congenital syphilis is most nearly approached by those conditions which show a slight inflammation of the meninges or brain and are not likely to be confused clinically with syphilis. The reaction in tuberculous meningitis is found to be most intense in the dilutions of 1:160 and 1:320. It is likely that the more rapid the course the more apt is the reaction to occur in the higher dilutions. From the foregoing statistics it is evident that the Lange gold chlorid reaction is of value only as an aid in diagnosis.

5. **Injection of Diphtheria Antitoxin in Children.**—In all, fourteen children received intravenous injections of diph-

theria antitoxin from Schorer. The results and symptoms observed are compared with those obtained in the same epidemic by subcutaneous injection in seven cases. Following intravenous injections the fever and membrane disappeared sooner and the patients felt well; diphtheria bacilli disappeared more rapidly; there were fewer carriers and paralyses were less frequent than when subcutaneous injections were made. Two children died in each series; death occurred from seven to fourteen hours after the first injection in each case. All four children who died had laryngeal diphtheria, but there were seven cases of laryngeal diphtheria in the series that received intravenous injections, and only two in the series given subcutaneous injections. When given intravenously, four injections out of sixteen were followed in from one-half to one and a half hours by striking symptoms. These were usually ushered in by a marked chill, then an elevation of temperature from 103.2 to 104 F., and in two cases by respiratory distress. All of these symptoms disappeared in from three to twenty hours, when the patients usually felt entirely well. That these were serum reactions did not seem to be the case, as in none did the later serum rashes appear. When serum rashes and reactions did occur they did not differ from those following other serum injections, though none occurred in the small series of patients receiving subcutaneous injections.

Schorer does not advocate intravenous injections in all cases, but, he says, intravenous injections undoubtedly produce results more rapidly and so are to be preferred in late and severe cases. Intravenous injections is less painful at the time of administration and later, and because of the smaller number of units necessary intravenous injection is much less expensive. Entrance into the jugular vein in children is not difficult and this vessel affords a ready site for the intravenous injection of diphtheria antitoxin when the median basilic and the cephalic veins are too small. This small series indicates that there are fewer carriers and heart failures are less likely to occur following intravenous injection, but there are more immediate and serum reactions. The immediate reactions are not grave and in themselves did not seem to be a contra-indication to intravenous injection of diphtheria antitoxin.

Boston Medical and Surgical Journal

January 7, CLXXII, No. 1, pp. 1-40

8 *Relation of Tonsils, Adenoids and Other Throat Conditions to Tuberculous Cervical Adenitis. G. L. Richards, Fall River.
9 *Treatment of Tuberculous Cervical Adenitis. H. D. Chadwick, Westfield.
10 *Id. J. B. Hawes, 2d. Boston.
11 Tuberculosis from Dentist's Viewpoint. G. H. Wright, Boston.
12 Visceral Ptosis. J. T. Williams, Boston.
13 Treatment of Anteposed Uteri. H. T. Hutchins, Boston.

8. **Relation of Tonsils and Other Throat Conditions to Tuberculcus Cervical Adenitis.**—As the result of his own experience and that of others, Richards recommends that in all cases of cervical adenitis the tonsil be removed as the first procedure. If the glands are broken down, and an operation on them has to be performed, then the tonsil should be removed at the same time. That the removal of the tonsil removes all source of possible danger of infection of the cervical lymph glands is not claimed, since anatomic studies have shown that the entire area of the middle ear, eustachian tube, superior, posterior and lateral pharyngeal wall, the tonsils, base of the tongue, and posterior nares all have their lymphatic drainage area into the cervical lymph glands.

The tonsil, however, being large, and situated in the back of the mouth, in which it is very subject to infection and to pressure during the act of eating and swallowing, is probably the greatest offender. As the tonsil is such a possible portal of infection, and as its removal seems to be followed by no deleterious effects on the organism, and as it is very likely to be a source of entrance for the infection of rheumatism, Richards advises its removal in all cases of cervical adenitis, and in all children whose parents give a history of having had cervical adenitis. At the same time, one cannot say with positiveness that the removal of the tonsil will either cure or prevent cervical adenitis. Richards state that it is not probable that all enlarged cervical lymph glands are tuberculous, presumably about 80 per cent. of them are.

9. **Treatment of Tuberculous Cervical Adenitis.**—Many of the children admitted at Westfield have tuberculous cervical glands. Not many are noticeably large, but they can be readily felt on examination. Almost invariably these children also have enlarged bronchial glands, as evidenced by impaired resonance between the scapulae. As a routine part of their treatment, Chadwick puts these patients on bacillen emulsion, if they do not have more than a degree of rise of temperature, or other signs of active pulmonary disease. The initial dose is one millionth of a milligram, and the course of treatment extends over a period of about six months, until 10 milligrams is reached; this maximum could be reached in a shorter time, but Chadwick feels that a small dose given over a longer period is more effective, and can be given in this way without causing reactions.

The result of treatment in these children is very satisfactory. The cervical glands decrease perceptibly in size, and the area of dulness over the hilus becomes smaller and less pronounced. The longer the tuberculous disease has existed in a gland the slower will be the effect of treatment. Resolution must necessarily be limited if fibroid changes have taken place. Suppuration has not occurred in any case in which it did not exist prior to treatment. This experience leads Chadwick to the conclusion that surgical interference is only necessary to remove such glands as have become caseous, or fibroid. Extensive dissections are unnecessary in these cases, as the small recently diseased glands that are left will disappear under the influence of tuberculin treatment.

10. **Treatment of Tuberculous Cervical Adenitis.**—Hawes says that surgery, conservative or, in rare cases, radical, depending on the surgeon's skill or lack of it, has its place; tuberculin in some cases does wonders, in other it plays a lesser rôle and at all events, in competent hands can do no harm. Hygienic measures including out-door sleeping, proper diet, exercise and rest, baths and heliotherapy are given their proper place as the basis of all treatment in all forms of tuberculosis while, of the greatest importance, the cleaning up of portals of entry and removal of foci of infection, such as carious teeth, diseased tonsils and adenoids, are recognized as an essential part of treatment for this condition.

California State Journal of Medicine, San Francisco

January, XIII, No. 1, pp. 1-42

14 Expert Witness from Standpoint of Attorney. O. C. Mueller, San Francisco.
15 Official Medical Experts. R. S. Gray, San Francisco.
16 Id. W. M. Cannon, San Francisco.
17 Medical Expert in American Jurisprudence. A. S. Lobingier, Los Angeles.
18 Cure of Syphilis. H. E. Alderson, San Francisco.
19 Progress in Obstetrics. A. H. Morse, San Francisco.
20 Relation of Periosteum to Bone Vitality. R. T. Stratton, Oakland.
21 Utility of Catarrhal Vaccines. F. Williams, San Francisco.
22 Some Causes of Frequent and Painful Micturition in Women. M. Molony, San Francisco.
23 Nutritional Disturbances of Infancy. G. D. Lyman, San Francisco.
24 Case of Complete Duplication of Renal Pelvis and Ureter. A. B. Cecil, Los Angeles.

Cleveland Medical Journal

December, XIII, No. 12, pp. 837-910

25 *Outflow from Liver and Relationship Between Portal and Hepatic Blood-Flow. J. J. R. MacLeod and R. G. Pearce, Cleveland.
26 Epidemiology of Whooping-Cough, Measles, Scarlet Fever and Diphtheria in Cleveland for 1913. R. G. Perkins, Cleveland.
27 History of Sugar in Animal Body. J. J. R. MacLeod, Cleveland.
28 Renal Secretory Fibers in Vagus Nerve. R. G. Pearce, Cleveland.
29 Stage Versus Class—Certain Aspects of Fever in Pulmonary Tuberculosis. G. W. Moorehouse, Cleveland.
30 Biologic Factors in Production of Wars. W. E. Lower, Cleveland.

25. **Outflow from Liver.**—A consideration of the morphologic structure of the liver suggests that the degree of tension, or the turgescence of Glisson's capsule, as determined by the blood-pressure and the size of the arterioles of the liver, may have a marked influence on the volume of the portal flow. Experiments were made by MacLeod and

Pearce to put this hypothesis to the test, and also with the hope of furnishing further data as to the relative size of the moieties of the portal and the hepatic blood. The total outflow of blood from the liver of the dog was found to vary between 1.06 and 2.40 c.c. per second and 100 gm. of liver. There is only a very general relationship between the magnitude of the flow and the mean arterial blood-pressure. Even after the vessels of the hepatic pedicle have been clamped, blood still collects in the vena cava. Part of this comes from minute lumbar veins; the remainder may be due to collateral circulation. Occlusion of the hepatic artery usually causes the outflow to diminish by about 30 per cent., but since the exact ratio between the flow in the portal vein and the hepatic artery will depend on the extent to which these vessels are under vasomotor control at the time of observation, the diminution may be considerably greater or less than 30 per cent. Occlusion of the portal vein usually diminishes the outflow by about 60 per cent.

Stimulation of the peripheral end of the cut hepatic plexus, with both artery and vein intact, causes an immediate increase in the outflow, after which this returns approximately to its original amount. This return to the normal flow is explained as due to a passive dilatation of the interlobular portal venules resulting from a lowering of the arterial tension in the capsule of Glisson. The changes in outflow following stimulation of the hepatic plexus are very much less marked, or absent altogether, when the hepatic artery is ligated. Injection of epinephrin (2 c.c. of 1 in 10,000) into the portal vein causes an immediate decrease in the outflow. This result is practically the same with unligated as with ligated hepatic arteries. It indicates that the ramifications of the portal vein in the liver are supplied with vasoconstrictor nerve fibers. Since a similar diminution did not occur when the hepatic plexus was stimulated, the portal vasomotor nerve fibers must be very feeble.

Journal of Experimental Medicine, Lancaster, Pa.

January, XXI, No. 1, pp. 1-102

31 Influence of Diet on Necrosis Caused by Hepatic and Renal Poisons; Chloroform, Phosphorus, Alcohol. E. L. Opie and L. B. Alford, St. Louis.

32 *Id. 2. Diet and Nephritis Caused by Potassium Chromate, Uranium Nitrate or Chloroform. E. L. Opie and L. B. Alford, St. Louis.

33 *New and Rapid Method for Isolation and Cultivation of Tubercle Bacilli Directly from Sputum and Feces. S. A. Petroff.

34 *Functional Effect of Experimental Intraspinal Injections of Serum with and without Preservatives. J. Auer, New York.

35 *Function of Spleen in Experimental Infection of Albino Mice with Bacillus Tuberculosis. P. A. Lewis and A. G. Margot, Philadelphia.

36 *Concerning Survival and Virulence of Micro-Organism Cultivated from Poliomyelitic Tissues. S. Flexner, H. Noguchi and H. L. Amoss, New York.

32. **Influence of Diet on Necrosis.**—The experiments conducted by Opie and Alford showed that diet exerts a profound influence on the toxicity of certain substances, namely, chloroform, phosphorus, potassium chromate and uranium nitrate, which cause necrosis of the parenchymatous cells of the liver or of the kidney. Susceptibility to intoxication with all of these substances is less after a diet rich in carbohydrate than after a diet consisting of meat. Carbohydrates protect the parenchymatous cells of the liver or of the kidneys from necrosis caused by any one of these substances. Chloroform is much more toxic to animals which have received a diet consisting in great part of fat than to those which have received meat. When fat is fed to the white rat fatty infiltration occurs in the centers of the hepatic lobules and in the loops of Henle of the kidney. The necrosis caused by chloroform has the same location. The solubility of chloroform in fat determines the increased susceptibility of animals which have received fat and stored it in the parenchymatous cells of the liver and kidney.

Susceptibility to intoxication with phosphorus which causes fatty degeneration and necrosis of the liver is not increased by a diet of fat. Necrosis caused by phosphorus occurs in the periphery of the hepatic lobule and exhibits maximum intensity in animals which have received meat. Susceptibility to intoxication with potassium chromate, which causes nephritis with necrosis of the convoluted tubules of the kidney, is not greater after a diet of fat than after a diet of meat. Susceptibility to intoxication with uranium nitrate, which causes nephritis with advanced necrosis of renal tubules, is increased by a diet of fat. The loops of Henle, in which fat is abundant after a diet of fat, are the chief site of necrosis.

33. **Isolation and Cultivation of Tubercle Bacilli.**—The work of Churchman, Krumwiede and Simons, on the effect of various dyes on the growth of micro-organisms, suggested the use of these dyes in the isolation of the tubercle bacillus to Petroff. At first an attempt was made to grow tubercle bacilli directly from the sputum on a medium containing gentian violet. Only a few Gram-positive streptococci and diplococci appeared in the tubes. These organisms were isolated and studied. A dilution of gentian violet 1 to 1,000 failed to inhibit their growth. For the elimination of some of them sodium hydrate proved to be of greater value than antiformin. To determine the bactericidal action of sodium hydrate on the tubercle bacillus, a series of tubes containing 1, 2, 3 and 4 per cent. sodium hydrate were inoculated with tubercle bacilli and left in the incubator for twenty-four hours at 37 C. At the end of that time the tubes were neutralized to litmus with normal hydrochloric acid, centrifugalized, and the sediment containing the tubercle bacilli was inoculated into tubes. After incubation for some time they showed positive growths of tubercle bacilli.

The next step was to determine what stain and dilution were most favorable for the growth of tubercle bacilli. For this purpose a series of medium containing gentian violet, methyl violet, methylene blue, crystal violet and fuchsin in dilutions varying from 1 to 1,000 to 1 to 100,000 were used. Tubercle bacilli will grow well on egg-meat juice medium containing all of the above stains even in dilution as low as 1 to 5,000, with the exception of methylene blue which gave negative results below a dilution of 1 to 25,000. In medium containing this stain the tubercle bacilli grow rather slowly, and the individual organisms are impregnated with the stain. From these results gentian violet was selected as the most favorable stain, on account of its inhibitory action on many organisms. After many attempts it was found that a medium containing whole egg, beef or, preferably, veal juice, and gentian violet gave uniformly positive results. This medium contains: Two parts of egg (white and yolk). One part of meat juice. Gentian violet sufficient to the proportion of 1 to 10,000. Tube about 3 c.c. in each sterile test-tube and inspissate for three successive days; on the first day at 85 C., until all the medium is solidified, changing the places of the tubes if necessary; on the second and third days for not more than one hour at 75 C. For the bovine type omit the glycerin and infuse the meat for twenty-four hours in water.

Method of isolating tubercle bacilli from the sputum: Fresh sputum is advisable. Equal parts of sputum (about 5 c.c.) and 3 per cent. sodium hydrate are well shaken and left in the incubator for twenty to thirty minutes until the sputum is fairly well digested. The sputum is then neutralized to sterile litmus paper with normal hydrochloric acid, centrifugalized, and the sediment inoculated into several test-tubes containing the medium.

Method of isolating tubercle bacilli from the feces: The feces are diluted with about 3 volumes of water and mixed well, then filtered through several thicknesses of gauze to remove solid food particles. The filtrate is saturated with sodium chlorid and left undisturbed for one-half hour. At the end of that time all bacteria will be found floating. This floating film is then collected with a deflagration spoon in a wide mouthed bottle, and an equal volume of normal sodium hydrate is added. This is shaken well and left for digestion in the incubator at 37 C. for three hours, in the meantime being shaken every half hour, neutralized to sterile litmus paper with normal hydrochloric acid centrifugalized, and the sediment inoculated into several test-tubes.

34. **Intraspinal Injections of Serum.**—Auer states that intraspinal injections of serum with and without preservatives (0.3 per cent. trikresol, 0.3 per cent. chloroform, 0.3 per

cent. ether) produce qualitatively the same effect on the medullary centers in the monkey and dog. The effects differ, however, quantitatively with the preservative employed, with the dosage, and with the species of animal used, the monkey being strikingly more resistant than the dog. Broadly stated, the respiration is first increased both in amplitude and rate for a short period of time; then, particularly in the dog, the amplitude decreases and the rate slows and the respiration may even stop for a shorter or longer period of time. The blood-pressure shows an initial rise followed by a gradual drop of varying degree. This drop is usually associated with a marked slowing of the pulse rate in the dog. The normal level is again reached after some minutes.

The ideal preservative for therapeutic serum would seem to be one which could be removed before injection. Ether in this respect is better than chloroform. The opsonins in antimeningitis serum are about equally affected by 0.3 per cent. trikresol, 0.3 per cent. chloroform, or 0.3 per cent. ether when tested after one week, one month and three months. When intraspinal injections are given in the human being it would seem advisable to be prepared to withdraw part of the injected fluid and to administer artificial respiration, if necessary. For a safe withdrawal of fluid the gravity method is the best; for artificial respiration Meltzer's apparatus for pharyngeal insufflation is recommended.

35. **Function of Spleen in Experimental Infection.**—The resistance to an infection with the tubercle bacillus which can be given to mice by the removal of the spleen, Lewis and Margot found, is lost when fresh spleen, either of mouse or sheep, is added to the diet. The logical conclusion that splenic function in its relation to the specific infection is restored by feeding spleen cannot, however, be drawn; because, in the first place, the character of the disease in the splenectomized spleen-fed animals differs somewhat from that in intact animals; and, second, because fresh spleen when fed to splenectomized animals apparently gives rise to an acute intoxication. This intoxication occurs quite regularly in mice. It is manifested in the infected animals and in those not inoculated. It has been seen in one of two splenectomized dogs experimented on. Up to the present it can hardly be definitely characterized but it seems to be best marked out by the specific anorexia associated with it.

36. **Survival and Virulence of Poliomyelitic Micro-Organism.**—The minute micro-organism cultivated by Flexner and his associates from poliomyelitic tissues survives and maintains its pathogenicity in cultures for more than one year. On inoculation into monkeys poliomyelitis may fail to appear on the first injection and yet follow from the effects of successive injections of the culture. Inoculations of cultures into monkeys which fail to produce paralysis may fail also to induce resistance or immunity. In this respect the action of the cultures resembles that of the virus as contained in infected nervous tissues. The lesions occurring in the spinal cord, medulla, and intervertebral ganglia of the monkeys which respond to the several inoculations of the cultures are identical with those present in the nervous organs of the animals responding to injection of the ordinary virus. Glycerinated nervous tissues derived from the monkeys responding to several injections of the cultures transmit experimental poliomyelitis to monkeys on intracerebral inoculation.

The micro-organism inoculated may be recovered in cultures from the monkeys which develop poliomyelitis; but cultivation from the brain tissue is attended with the usual difficulties surrounding the obtaining of the initial growth. The micro-organism cultivated from poliomyelitic tissues is adapted with difficulty to saprophytic conditions of multiplication, but once adapted growth readily takes place on suitable mediums. When, however, as a result of inoculation into monkeys, the parasitic propensities of the micro-organism are restored, it again displays the marked fastidiousness to artificial conditions of multiplication present at the original isolation. The experiments reported by the authors afford additional strong evidence in support of the view that this micro-organism bears an etiologic relationship to epidemic poliomyelitis in the human subject and to experimental poliomyelitis in the monkey.

Journal-Lancet, Minneapolis

January 1, XXXV, No. 1, pp. 1-24

37 *Use of Indirect or External Fixation in Open Treatment of Fractures. E. P. Quain, Bismarck, S. Dak.
38 Spina Bifida with Myelomeningocele: Removal of Myelomeningocele and Closure of Spinal Cleft by Transplantation of Animal Bone. H. M. Erenfeld, Anamoose, N. Dak.
39 Should We Mourn Loss of European Clinics? W. H. Condit, Minneapolis.

37. **Indirect or External Fixation in Open Treatment of Fractures.**—The following advantages of indirect or external fixation of fractures, especially over the technic of plating are emphasized by Quain. 1. Comparative ease and rapidity of application, permitting a surgeon of good operative judgment and technic, but lacking extensive experience in bone-surgery, to operate with reasonable safety and success and with a minimum destruction of bone elements. 2. The fixation is firm, and permits early movements of neighboring joints. 3. There is no metal in contact with the fracture line. 4. The screws are entirely removable, leaving no foreign body behind. 5. In compound fractures it holds the fragments in place, aids drainage and makes dressing convenient and painless.

Journal of Outdoor Life, New York

January, XII, No. 1, pp. 1-30

40 Last Room. M. A. Schwatt, Denver.
41 Value of and Necessity for Local Tuberculosis Hospitals. L. R. Williams, Albany, and O. R. Eichel, Buffalo.
42 *First Aid in Pulmonary Hemorrhage for Hospital and Sanatorium Patients. H. B. Freer, Oak Forest, Ill.
43 Bamford Hills Camp for Children. C. Dinwiddie, Cincinnati.
44 Antituberculosis Campaign in Texas. R. J. Newton, Austin, Tex.
45 Red Cross Seals and Antituberculosis Campaign. P. P. Jacobs.
46 Value of Periodic Health Examinations. E. L. Fisk, New York.

42. **First Aid in Pulmonary Hemorrhage.**—Freer describes a basket fully equipped to give first aid in hemorrhage and which is in use at the Cook County Tuberculosis Hospital. The basket is about 20x27 inches in size and 6 inches deep. The compartments are so arranged that every article is plainly seen and easily reached. A card is attached, giving on one side the physician's standing order, and on the other side a list of articles contained in the basket arranged according to their use. The list is as follows: 1. One rubber bib. 2. Two towels. 3. Two pus basins. 4. One ice-cap. 5. One bowl (for chipped ice). 6. One teaspoon (for chipped ice). 7. One ice pick. 8. One jar cotton pledgets. 9. One bottle alcohol 4 ounces. 10. One bottle sterile water. 11. One hypodermic syringe. 12. Three hypodermic needles (aseptic). 13. Wires for hypodermic needles. 14. Nitroglycerin tablets 1/100 grain. 15. Atropin sulphate 1/150 grain. 16. Morphin sulphate ¼ grain. 17. Pituitrin. 18. Box amyl nitrite perles. 19. Thirty-six gauze squares 3x6. 20. Solution magnesium sulphate. 21. Glass drinking tube. 22. One 6 pound paper bag.

The nurse who discovers the patient having hemorrhage attends the case; places the patient in the recumbent position with assurance that rest and quiet are of the greatest importance. A second nurse is then pressed into service. She notifies the physician in charge and returns to the bedside as quickly as may be possible with the hemorrhage basket. The assistant now takes the ice-bag and bowl from the basket and proceeds to fill them with chipped ice. The ice-bag is placed over the heart of the patient and chips of ice placed in the patient's mouth as the bleeding diminishes. If for some reason the physician is detained and the hemorrhage is profuse, the nurse proceeds to carry out the standing order by giving 1/100 grain of nitroglycerin, hypodermically. It is necessary, perhaps, that the nurse proceed further by breaking in a piece of gauze, a three minim amyl nitrite perle which is given the patient to inhale, with a word about its effect, as the sensation sometimes frightens the patient exceedingly. All patients receive as soon as possible 1 ounce or more of the saturated solution of magnesium sulphate, repeated as the physician may order. The patient is not permitted to leave his bed under any circumstances.

Kansas Medical Society Journal, Topeka

September, XIV, No. 9, pp. 325-362

47 Therapeutic Uses of Pituitary Extract. E. A. Reeves, Kansas City.
48 Why Medical Society? O. P. Davis, Topeka.
49 Nodular Headache. F. J. Moffatt, Clyde.

Kentucky Medical Journal, Bowling Green

December 15, XII, No. 24, pp. 789-822

50 Hypernephroma of Kidney. Report of Case. O. H. Kelsall, Louisville.
51 Neuritis. J. J. Moren, Louisville.
52 Cancer of Tonsil. Report of Case. J. G. Sherrill, Louisville.
53 Case of Glaucoma. C. T. Wolfe, Louisville.
54 Osteo-Enchondroma of Scapula. J. H. Peak, Louisville.
55 Derelict Kidney. Report of Case. G. H. Day, Louisville.
56 Abdominal Adhesions Prevented with Sodium Citrate in Hypertonic Salt Solution. Report of Case. J. R. Wathen, Louisville.
57 Foreign Body in Submaxillary Gland. Report of Case. J. A. O. Brennan, Louisville.
58 High Frequency Treatment of Bladder Tumors. H. Bronner, Louisville.
59 Intestinal Obstruction. J. W. Price, Jr., Louisville.
60 Ludwig's Angina. J. H. Peak, Louisville.
61 Inversion of Uterus. W. O. Roberts, Louisville.

January 1, XIII, No. 1, pp. 1-52

62 Question of Contagious Eye Diseases in Public Schools of Louisville. J. M. Ray, Louisville.
63 Four Years of Kentucky Vital Statistics. W. L. Heizer, Bowling Green.
64 Treatment of Middle Ear Through Eustachian Tube. R. W. Bledsoe, Covington.
65 Social and Economic Aspect of Deafness. I. A. Lederman, Louisville.
66 *Preparation and Use of Autogenous Vaccines. J. D. Allen, Louisville.
67 Lacerations of Perineum. H. D. Rodman, Bardstown.
68 Treatment of Diseases of Breast. G. P. Grigsby, Louisville.
69 Intestinal Catarrh. O. P. Goodwin, Pleasureville.

66. Abstracted in THE JOURNAL, Oct. 25, 1914, p. 1502.

Lancet-Clinic, Cincinnati

December 26, CXII, No. 26, pp. 689-716

70 Edema of Brain. E. M. Baehr, Cincinnati.
71 Anaphylaxis. L. A. Fox, Birmingham, Ala.
72 Glands of Internal Secretions. B. Holmes, Chicago.

January 2, CXIII, No. 1, pp. 1-26

73 Alleged Dangers of Intravenous Injections in High Blood-Pressure. J. J. Hogan, San Francisco.
74 Early Recognition of Whooping-Cough by Complement Deviation Test. A. Friedlander, Cincinnati.
75 Case of Pellagra in Cincinnati General Hospital. A. Ravogli, Cincinnati.
76 Local Anesthesia in Operations for Hernia and Lacerated Perineum. R. Duffy, Tampa, Fla.

New Orleans Medical and Surgical Journal

December, LXVII, No. 6, pp. 503-590

77 Medical Periodical and Scientific Society. F. H. Garrison, Washington, D. C.
78 *External Vaccine Therapy. H. P. Towle, Boston.
79 Trigger Finger. Report of Case. E. D. Fenner, New Orleans.
80 Use of Clamps in Resection of Bladder. Report of Case. C. W. Allen, New Orleans.
81 Necessity of More Careful Study of Renal Function Prior to Operation. E. L. King, New Orleans.
82 Case of Mucous Mastoiditis. I. Erwin, New Orleans.
83 Case Exemplifying Value of Pyelography. M. J. Gelpi, New Orleans.

January, No. 7, pp. 591-670

84 Uterine Fibroids in Pregnancy and Labor. P. Michinard, New Orleans.
85 *Experience with Endo-Aneurysmorrhaphy (Matas). H. B. Gessner, New Orleans.
86 Anatomic Explanation of Many Cases of Low Back-Ache and Sciatic Pain. J. T. O'Ferrall, New Orleans.
87 Twilight Sleep. P. J. Carter, New Orleans.
88 Ataxic Types of Polyneuritis Resembling Tabes. E. M. Hummel, New Orleans.
89 Uterine Hemorrhage at Puberty. R. Duffy, Tampa, Fla.
90 Hematuria and Its Possible Significance. F. C. Walsh, San Antonio, Tex.

78. Abstracted in THE JOURNAL, June 20, 1914, p. 1988.

85. **Endo-Aneurysmorrhaphy.**—Seven cases are reported by Gessner. Of the aneurysms three were fusiform, one false, three arteriovenous; of the latter two were varicose aneurysms, one arterial varix. Of the seven cases, four (the one false and three arteriovenous) were due to gunshot injury. Four obliterative operations were done and three restorative. No gangrene, no hemorrhage, no recurrence followed the operation. There was no mortality attributable to the operation, though one patient died of erysipelas eighteen days after operation, the infection being derived from another case; a second patient died of multilocular prostatic abscess forty-three days after operation. In the Charity Hospital of New Orleans, from 1884 to 1903, inclusive, thirty-three cases of popliteal aneurysm were treated, of which seventeen were cured, eight improved, one unimproved, seven died—a gross mortality of 21.21 per cent. for the older methods of treatment.

New York Medical Journal

January 9, CI, No. 2, pp. 49-96

91 Metastatic Complications of Suppurative Otitis Media. S. Oppenheimer, New York.
92 Some Medicomilitary Observations in Late Balkan Wars. C. S. Ford, U. S. Army.
93 Pneumococcus Infection and Immunity. R. I. Cole, New York.
94 Conservative Estimate of Radium Therapy from Clinical Standpoint. W. B. Chase, New York.
95 Should Newborn Infant Receive Anything During First Two or Three Days? C. Herrman, New York.
96 Osteo-Arthritis in Tabes Dorsalis. J. R. Martin, Philadelphia.
97 *Decapsulation of Kidney. R. R. Huggins, Pittsburgh.
98 Pituitary Extract in Postoperative Intestinal Stasis. R. Duffy, Tampa, Fla.
99 Outfit for Urethral and Bladder Irrigations. E. G. Ballenger and O. F. Elder, Atlanta, Ga.

97. **Decapsulation of Kidney.**—Decapsulation and nephrotomy in Huggins' opinion are entitled to a place in the treatment of nephritis. The success and value of the operation will depend entirely on the care and judgment with which cases are selected. It is not to be used until all other methods have failed, and when employed it must not be done indiscriminately. Its use seems to be indicated: in toxic nephritis following acute poisoning by mercury or phenol; in nephritis following infection, especially the acute infectious diseases, such as scarlet fever, etc., in which there is great edema or in the presence of uremia—its use should be considered as soon as medical measures have been thoroughly tried without relief. This is true especially in young adults and children; in severe hemorrhage complicating chronic nephritis, when the bleeding is practically limited to one side. In these cases a nephrotomy should be done to make sure of the exact cause of the hemorrhage. It may be indicated for the relief of renal pain which sometimes occurs in the course of chronic nephritis. It may be of value in uremia and anuria during the course of chronic nephritis, merely as an emergency measure. In eclampsia, when the symptoms are due to faulty action of the kidney, and in cases in which improvement does not follow delivery of child. Cases of movable kidney associated with albuminuric casts and hematuria, in which the urinary signs result from the trauma incident to the mobility, may be cured by decapsulation and fixation, but when coincident with chronic Bright's, only temporary good is effected.

South Carolina Medical Association Journal, Seneca

December, X, No. 12, pp. 732-765

100 Complete Inversion of Uterus. J. E. Pressly, Abbeville.
101 Obstetrics in Slums. S. O. Black, Philadelphia.
102 Conduct of Normal Labor. D. L. Maguire, Charleston.
103 Midwife. C. W. Kollock, Charleston.

Southern Medical Journal, Mobile

December, VII, No. 12, pp. 923-1000

104 *Profit and Loss Account of Modern Medicine. S. McGuire, Richmond, Va.
105 Importance of Fundamental Methods of Physical Examination in Practice of Medicine. W. S. Thayer, Baltimore.
106 Conservation of Children in Our Schools. J. L. Bowman, Union Springs.
107 Case of Acute Mania Following Use of Atropin in Eyes. D. Roy, Atlanta, Ga.
108 Series of Foreign Body Cases. R. H. Johnston, Baltimore.

104. Abstracted in THE JOURNAL, Dec. 5, 1914, p. 2068.

Tennessee State Medical Association, Nashville

November, VII, No. 7, pp. 271-314

109 Suprapubic Prostatectomy. Report of Cases. G. R. Livermore, Memphis.
110 Prostatic Hypertrophy. H. M. Tigert, Nashville.
111 Iodin in Diseases of Cornea. J. T. Herron, Jackson.

112 Treatment of Amebic Dysentery. O. N. Bryan, Nashville.
113 Practical Anesthesia. W. N. Lynn, Knoxville.
114 Some Early Experiences in My Obstetric Practice. R. E. L. Smith, Doyle.
115 Food Intoxications of Childhood. O. W. Hill, Knoxville.

Texas State Journal of Medicine, Fort Worth

December, X, No. 8, pp. 303-346

116 Metallic Poisoning. H. C. Hall, Aguascalientes, Mexico.
117 Diagnosis of Incipient Pulmonary Tuberculosis. R. B. Homan, El Paso.
118 Treatment of Tuberculosis; Serum or Vaccine. B. Cornick, San Angelo.
119 Can We Immunize Against Tuberculosis? J. J. Terrill, Temple.
120 Tuberculosis of Childhood. C. M. Hendricks, El Paso.
121 Blood-Pressure in Tuberculosis. B. T. Young, San Antonio.
122 Tuberculosis. M. M. Smith, Dallas.
123 Family History. W. M. Brumby, San Antonio.
124 Incomplete and Careless Examinations. G. T. Vinyard, Amarillo.
125 One Reason We Fail in Tuberculosis. I. S. Kahn, San Antonio.
126 Organic—Inorganic—Organic Cycle. J. B. Hawley, Fort Worth.

FOREIGN

Titles marked with an asterisk (*) are abstracted below. Single case reports and trials of new drugs are usually omitted.

Annals of Tropical Medicine and Parasitology, London

December, VIII, No. 3, pp. 369-640

1 Yellow Fever in Guayaquil, Ecuador. J. M. O'Brien.
2 Trypanosomiasis in Eket District of Nigeria. J. W. S. MacFie and G. H. Gallagher.
3 Id. W. C. W. Eakin.
4 Trypanosomes Found Infecting Wild Glossina Tachinoides. J. W. S. MacFie.
5 Some Blood Parasites Collected in Nigeria. J. W. S. MacFie.
6 Trypanosome of Gambian Mice. J. L. Todd.
7 Granule Phase of Spirochetes. H. B. Fantham.
8 Case of Naso-Oral Leishmaniasis and Case of Oriental Sore, Both Originating in Anglo-Egyptian Sudan. J. B. Christopherson.
9 Observations on Morphology and Biology of Auchmeromyia Luteola. J. Schwetz.
10 *Relation of Bile Pigments to Hemoglobin. J. O. W. Barratt and W. Yorke.
11 Antimalarial Campaign in Formosa. J. Hatori.
12 Klossiella in Kidney of Guinea-Pig. H. Seidelin.
13 *Changes in Neutrophil Blood Picture of Arneth in Children Living in Tropical Queensland. A. Breinl and H. Priestley.
14 Occurrence of Lead Poisoning Among North Queensland Children. A. Breinl and W. J. Young.
15 *Blood Conditions of Children of European Descent Residing in Tropical Australia. A. Breinl and H. Priestley.
16 Migration of Larvae of Onchocerca Gibsoni Through Capsule of Worm Nodule. W. Nicoll.
17 Morphology, Biology and Economic Importance of Nosema Bombi, Parasitic in Various Humble Bees. H. B. Fantham and A. Porter.
18 Schedule for Recording Cases of Blackwater Fever. J. W. W. Stephens.

10. **Relation of Bile Pigments to Hemoglobin.**—Summarizing the data obtained in their investigation, Barratt and Yorke find that consequent on intravenous injection of hemoglobin solution there is a distinct and immediate increase not only in the concentration of bile pigment, but also in the amount of bile pigment excreted. During the three or four hours following the injection of hemoglobin the amount of pigment excreted may increase to from four to six times the amount found in the samples examined before the injection. Two hypotheses are advanced to explain this increase in amount of pigment excreted, first, that the hemoglobin injected is actually converted by the liver into bile pigment, and second, that it merely stimulates the liver cells to an increased production of bile pigment. Against the former hypothesis is the fact that the increase of pigment is not so great as might be anticipated from the relatively large quantities of hemoglobin introduced into the circulation and consequent high degree of hemoglobinemia resulting (up to 20 per cent.). The amount of hemoglobin solution found in the plasma of normal rabbits is exceedingly small, varying from 0.02 to 0.05 per cent. This fact seems to indicate that the degree of red cell destruction normally occurring in the living animal is slight. Assuming that the pigment of the normal bile is derived entirely from hemoglobin set free by the disintegration of erythrocytes normally occurring in the living animal, then it is rather surprising that when the degree of hemoglobinemia is increased 400 times, the amount of bile pigment should only be increased at the most sixfold.

13. **Changes in Neutrophil Blood Picture of Arneth in Children.**—The number of polymorphonuclear neutrophil leukocytes in the blood of children living in tropical Queensland was found distinctly decreased by Breinl and Priestley, the number of the eosinophil leukocytes markedly increased. The Arneth count performed on 150 schoolchildren living in tropical Queensland showed a marked shift to the left, the Arneth index being 74.5 as compared to 40 normal individuals (Arneth) in Europe. The "shift to the left" in the Arneth blood picture is, in the author's opinion, due to the effect of a tropical climate on the white race living in the tropics.

15. **Blood Conditions of Children of European Descent.**—Careful blood examinations were performed by Breinl and Priestley on 574 schoolchildren of European descent, of ages between 7 and 15, of whom the majority had been born and had resided in tropical Queensland during their whole life. The results indicate: 1. That the average number of red blood corpuscles is not diminished when compared with analogous figures for children born and bred in a temperate climate. 2. That the average hemoglobin content of the blood is normal. 3. That the number of leukocytes is slightly increased. 4. That the average blood-pressure does not show any difference from that of normal children in temperate climes.

British Medical Journal, London

December 19, II, No. 2816, pp. 1053-1092

19 Work of "Clearing Hospitals" During Past Six Weeks. A. Bowlby.
20 *Potassium Permanganate in Sloughing and Tetanus-Infected Wounds. L. Rogers.
21 *Iodin as an Antiseptic in Joint Injuries. A. G. Wildey.
22 Simple Form of Portable Dressing Sterilizer. C. W. Cathcart.
23 Kala-Azar or Parasitic Splenomegaly and Allied Infections. P. W. Bassett-Smith.
24 *Is Emetin Sufficient to Bring About Radical Cure in Amebiasis? L. Phillips.

December 26, No. 2817, pp. 1093-1124

25 Color Vision and Tests for Color Blindness. C. D. Marshall.
26 Colectomy for Intestinal Stasis. Report of Four Cases. A. W. Sheen.
27 *Operation for Movable Kidney. G. S. Thompson.
28 Cockroaches. A. E. Shipley.
29 Case of Tetanus Treated by Injections of Phenol. P. Stewart and J. T. C. Laing.

20. **Potassium Permanganate in Sloughing Wounds.**—For several years past Rogers has treated cancrum oris with very frequent washing with a dark purple solution of potassium permanganate (about 1 in 500), together with swabbing the ulcerated surface with a 1 per cent. solution two or three times a day. In several cases this treatment has stopped the sloughing of the tissues, and complete healing has followed, while in more than one patient recovery from kala-azar has ensued. In the case of a most extensive and deeply sloughing bed sore right across the sacrum, occurring in a remarkable case of streptococcal pneumonia and septicemia, in which the patient who had got over the lung inflammation, but was slowly sinking, apparently through septic absorption from the sloughing sacral ulcer, several layers of lint soaked in 1 per cent. solution of potassium permanganate, and covered with water-proof material, were placed on the bed sore and changed every four hours with the result that the ulcer rapidly cleaned up and began to heal, and the man ultimately left the hospital cured. In another case of a severe bed sore in a bad case of typhoid in an obese subject, an equally favorable result was obtained by this treatment after other means had failed. In two cases of suppurative onychia after a variety of antiseptic applications during several weeks had completely failed to control the infection, the application of a strong solution of permanganate, until it was no longer decolorized on coming into contact with the discharge squeezed out from around the nail, completely cleared up the condition within three or four days.

Rogers believes that the most important action of potassium permanganate is its power of oxidizing and rendering harmless the toxins produced by bacteria, which produce a

negative chemotaxis, and thus prevent the phagocytic polynuclear leukocytes from dealing with the invading organisms. When their toxins are destroyed by the permanganate they no longer repel the phagocytes, which can now protect the system against their invasion in a manner which non-oxidizing antiseptics fail to allow. Rogers is of the opinion that the use of strong permanganate solutions, not less than 1 in 500, for irrigating all dust and earth-infected wounds is well worthy of trial in the field.

21. **Iodin as an Antiseptic in Joint Injuries.**—Thorough skin toilet, paring of every particle of soiled and badly damaged tissue, swilling with iodin 2 per cent. in alcohol and with saline alternately, closure of the wounds by piling up the skin edges with mattress sutures to ensure complete coaptation, and the avoidance of artificial drainage—have been employed in all cases of lacerated wounds and compound fractures, and wounds of joints treated by Wildey in the naval hospitals of Chatham, Plymouth, and Haslar during a period of four years. No other antiseptic than iodin is used in contact with the wounds. The results have been most gratifying. Sepsis has been extremely rare, and when it has occurred has invariably originated in the skin wound and never in the depths of the wound. The mattress sutures employed reduce the chances of infection by the skin wound. Every effort is made to secure rapid healing of the skin. Every particle of damaged skin is removed, plastic maneuvers being sometimes necessary to secure easy coaptation. A loose stitch or two permits free drainage of serum, and these gaps are closed as soon as possible. It is a great safeguard flto spray the wound daily with iodin.

24. **Is Emetin Sufficient to Bring About Radical Cure in Amebiasis?**—The following line of treatment is suggested by Phillips. The administration of emetin hypodermically for at least ten days or longer if the state of the patient demands it, followed by the oral administration of the drug. This is to be followed by subsequent courses of increasing intervals, as is the practice with syphilis or malaria, and in the intervals courses of calomel combined with thymol; if this is not sufficient, some other intestinal parasiticide should be tried. No man should be considered cured until, after several examinations, no cysts of *Entameba histolytica* are to be found in the feces. Further, all carriers, even though they may never have had dysenteric or other symptoms, are to be considered as cases of amebiasis and treated as such.

27. **Operation for Movable Kidney.**—The principle of Thompson's operation is the insertion of the kidney into, and its suspension by a sling, and the fixation of the latter to the posterior abdominal wall. The sling consists of a net made from chromicized catgut, or floss silk, the material varying according to the predilection of the surgeon. These slings are made in various sizes to meet the requirements of the particular case. A gap is left at the hilum 2 inches long by 1 inch broad, so that the border of the net here falls well short of the vessels and duct, and thus no pressure can be exercised on these important structures. The convex border is left open to facilitate the insertion of the kidney into the sling, and at the ends of this opening two free ligatures are left open for the purpose of lacing up the gap, and then used to sling the net to the abdominal wall. The complete sling is thus reinform with a permanent gap at the hilum and a temporary slit along the outer border, the size of the mesh being about 0.5 cm.

The kidney, having been exposed in the usual way, is inserted through the gap and by the help of the slit into the sling; it is then laced in, but loosely, and when this is completed the ligatures are knotted and thus fixed, the lower ligature ending above opposite the costal groove on the kidney. One or two fixation sutures include the net and kidney and maintain the proper relative positions of both. The kidney having been invested, the next step is to fix it in position by the free ligatures along the outer border. One is passed external to the normal position of the kidney over the twelfth, or if necessary the eleventh rib, the other through the muscles near the lower end of the viscus and the two ends tied loosely under the skin in order that the kidney may be free to move with respiration and adapt itself spontaneously to the exact position, after the patient has been placed in bed with the foot blocked up. The remaining steps of the operation are as usual. Thompson claims that the netting will provoke a celluloplastic exudation which will surround and infiltrate the mesh-work, and in time form by organization a firm adventitious tissue capsule in addition to the extraneous capsule already present.

Journal of Tropical Medicine and Hygiene, London

December 15, XVII, No. 24, pp. 369-380

30 *Occurrence of Certain Structures in Erythrocytes of Guinea-Pigs and Their Relationship to So-Called Parasite of Yellow Fever. C. M. Wenyon and G. C. Low.

31 Transmission of Trypanosoma Brucei of Nigeria by Glossina Tachinoides. G. H. Gallagher.

30. **Erythrocytes of Guinea-Pigs and Their Relationship to Parasite of Yellow Fever.**—In the blood of normal guinea-pigs, born and bred in England, Wenyon and Low found bodies indistinguishable from the so-called *Paraplasma flavigenum* of Seidelin. In most cases these appear to be definite structures which probably have to do with the development or degeneration of the red cells. They are not parasitic because they occur in the blood of newly born animals, not forgetting even the possibility of a placental transmission. The apparent success of the inoculation into guinea-pigs of such bodies from yellow fever cases is due to a failure of a sufficient examination of control animals. The authors are convinced that the evidence in favor of the yellow fever bodies being parasites thus breaks down, and that the presence of such bodies in yellow fever bears, therefore, no diagnostic significance apart from the evidence of blood alteration.

Lancet, London

December 26, II, No. 4765, pp. 1451-1502

32 *Modern Aspects of Certain Problems in Pathology of Mental Disorders. E. Goodall.

33 Case of Intestinal Obstruction. A. W. Jones.

34 Stretchers for Wounded in Trenches. G. K. Aubrey.

32. **Certain Problems in Pathology of Mental Disorders.**—Out of 19 cases of dementia paralytica examined by Goodall in which 0.2 c.c. of pure cerebrospinal fluid was used for the test, 11 gave a positive Wassermann and 8 a negative one; and out of 14 cases in which 1 c.c. was used, 10 gave a positive and 4 a negative reaction. Whereas the figures for other forms of insanity were, with 0.2 c.c. all negative in 13 cases; with 1 c.c., 5 positive out of 12; but as 3 of these were certainly or possibly cases of cerebrospinal lues, only 2 out of 12 were positive in non-general paralytics and non-syphilitics with 1 c.c. as against 10 out of 14. The deductions drawn by Goodall in respect to the employment of increasing strengths of cerebrospinal fluid amboceptor are that a positive Wassermann with 0.2 c.c. of a 1 in 10 solution indicates dementia paralytica, but a negative reaction with any strength up to even 1 c.c. of the pure fluid does not exclude this disease if only once obtained; that negative reactions with large amounts of fluid are not infrequently obtained in, at any rate, the more quiescent periods of the disease, or in slowly progressive cases; that in such periods and cases the complement-deviation method cannot be relied on for diagnosis between dementia paralytica and cerebrospinal lues.

Goodall and his associate, Schöelberg, also tested the hemolytic property of the serum and of the cerebrospinal fluid, respectively, from patients with mental disorder, against sheep's blood corpuscles. Fourteen cases of insanity other than of general paralysis and fourteen cases of general paralysis are dealt with. As regards the non-general paralytics there is absence of hemolysis with the "normal" cerebrospinal fluid in every case; from which it is to be inferred that complement or hemolytic amboceptor, or both are lacking in the cerebrospinal fluid. The addition of hemolytic serum (on the basis of the titer ascertained for the Wassermann test) made no difference except in one case (hemolysis); the subsequent addition of complement produced hemolysis in all the other tubes. In 4 out of 14 tubes containing complement H = +, but in the remaining 10 H = slight or

absent, showing that either insufficient complement had been used or that amboceptor was deficient, or showing both. The appearance of hemolysis in 5 out of 8 cases, on adding amboceptor shows that amboceptor was deficient in them; but in the remaining 3 hemolysis was brought about on further addition of complement.

As regards the general paralytics (14 cases) there is absence of hemolysis in all but two of the "normal" tubes, in which it occurred to a slight extent. The addition of hemolytic serum made no difference except in one case, in which hemolysis resulted. In the other cases hemolysis was produced by subsequent addition of complement. In 8 out of the 14 complement-holding tubes H = +; in 4 others H = slight; in 2 others H was absent. In 5 of these last 6 (H slight or absent) hemolysis was rendered complete or brought about by adding amboceptor or amboceptor and complement. The conclusion is that there is absence or deficiency of complement in the cerebrospinal fluid in dementia paralytica, and there is sometimes deficiency, at any rate, of amboceptor.

Bulletin de l'Académie de Médecine, Paris

December 8, LXXII, No. 39, pp. 317-348

35 Tetanus; Twenty-Four Cases. Boquel and C. Achard.
36 Three Months' Experience with War Wounds. (Plaies de guerre.) H. Hartmann. See Paris Letter, p. 259.
37 Therapeutic Injections of Aged Cultures. P. Delbet, Beauvy and Girode.

Archiv für Gynaekologie, Berlin

CIII, No. 3, pp. 395-589. Last indexed January 2, p. 89.

38 *Contracted Pelvis at Innsbruck. (Die Geburtsleitung bei engem Becken an der Innsbrucker geburtshilflichen Klinik in den letzten 15 Jahren mit bes. Berücksichtigung der daselbst ausgeführten Kaiserschnitte.) O. Nebesky.
39 General Anesthesia in Gynecology. V. (Extradurale Anästhesie.) H. Schlimpert.
40 Early Stages and Abortive Forms of Corpus Luteum Production. J. Wallart.
41 Ovarian Hemorrhages. (Ovarialblutungen.) V. Cantoni.
42 Relations Between Corpus Luteum and Menstruation. J. Halban and R. Köhler.

38. **Contracted Pelvis.**—Nebesky states that in 10.5 per cent. of 15,998 obstetric cases at the Innsbruck maternity the accoucheur had to contend with a contracted pelvis. About 44 per cent. of the women were primiparae, and 61.4 per cent. of the total 1,673 pelves were of the flat type with evidences of rachitis in 18.3 per cent. and of rachitis plus contraction in an additional 8.9 per cent. He devotes nearly a hundred pages to analysis of this material from various standpoints. Fully 10 per cent. more of the children die with pelvic than with cephalic presentation. He repudiates prophylactic version, and with transverse presentation seeks to change it to vertex by manipulation from without. In case of prolapse of the cord, he reduces this before proceeding farther. With primiparae and with a moderately contracted pelvis, expectant management of the case should be the rule.

If the history of former deliveries or the size of the head suggests that spontaneous delivery cannot be expected, then cesarean section should be done at once, just after or before the first labor pains. This has several advantages, and the transperitoneal incision in the cervix he commends as the preferable technic. By operating thus early, complications are avoided and the mother is saved unnecessary stress. If complications are already installed, we must be ready to sacrifice the child in the interests of the mother, and a cautious attempt at forceps extraction may save the fetus from perforation. No form of cesarean section is applicable, he thinks, in infected cases of contracted pelvis. If cesarean section is refused, then premature artificial delivery is the next best. It should be managed with cephalic presentation the same as a normal delivery. Since the above principles have been systematically applied, 3.7 per cent. more children have been born alive with simple flat pelvis; 9.4 per cent. more with rachitic flat; 6.7 per cent. more with generally contracted pelvis, and 23.1 per cent. more with rachitic contracted pelvis. Only 11.1 per cent. of 898 children died among the multiparae, in contrast to 18.3 per cent. of 2,431 in the cases in former years managed under different principles.

Correspondenz-Blatt für Schweizer Aerzte, Basel

November 7, XLIV, No. 45, pp. 1393-1424

43 Operative Treatment of Puerperal Fever. A. Schwyzer (St. Paul).
44 Some Minor Points in Obstetric Practice. (Technische Neuerungen in der geburtshilflichen Hauspraxis.) E. Schwarzenbach.
45 Eczema Spreading through Day Nursery after Vaccination; Twenty-Three Cases. L. Bossart.

November 14, No. 46, pp. 1425-1456

46 *Upset in Fluid and Salt Balance in Certain Cases of Constitutional Obesity. M. Düring.

November 21, No. 47, pp. 1457-1488

47 *Serology as Key to Certain Problems of Heredity. (Vererbungsprobleme in der Immunitätsforschung.) L. Hirschfeld.
48 Isolated Traumatic Rupture of the Spleen. J. Bauer.

November 28, No. 48, pp. 1489-1520

49 *Salol-Phenol Prophylaxis of Tetanus. C. Arnd and F. Krumbein.
50 Surgical Experiences in the Balkan Wars. K. Reber.

46. **Upset in Fluid and Salt Balance in Obesity.**—Düring writes from the pharmacologic institute at Basel, in charge of Prof. A. Jaquet, to report extensive and protracted study of the metabolism in five cases of constitutional obesity. The findings show that a large part of the excess in weight is due, not to deposits of fat, but to retention of water. It is impossible to say whether this is the result of insufficiency on the part of the kidneys or to constitutional anomalies in the tissue cells with abnormal osmotic processes. There was also in his cases a tendency to a neuropathic constitution. Disturbance of kidney functioning may accompany emotional stress, neurasthenia, epileptic seizures, etc., confirming the influence of the nervous system on kidney functioning. He cites a number of cases in which after a severe fright adults increased in weight by more than 70 pounds in three months and the weight persisted at this high figure. One patient was a nervous woman of 43 weighing about 149 pounds. On a salt-poor diet she lost 1.5 kg. in six days. Then came some emotional stress, connected with getting a divorce, and in five days the weight ran up 1.7 kg. while the total urine dropped from 1,550 to 980 c.c. She was quieted with bromids and under increased diuresis the weight dropped back again in two days by 1.7 kg. These fluctuations were the more remarkable as the patient was too worried to eat.

His experiences teach that the conception of obesity will have to be broadened to take in more factors than those hitherto accepted. In three of his cases the thyroid seemed not to have reached full normal development, although the women were 40 to 52 years old. Each had borne healthy children. On food rich in albumin with normal salt content, the weight remained constant or increased. With muscular exercise also the weight increased. On the other hand, a milk diet and repose increased the total output of urine and the patients lost in weight. This occurred also when the food contained little albumin or salt. The weight declined also under thyroid treatment plus repose.

47. **The Blood and Problems in Heredity.**—Hirschfeld has been applying the Mendelian laws to the inheritance of the characteristics of the blood. The results justify the hope that study of the blood of different peoples may throw light on their racial history, migrations and intermarriages.

49. **Prophylaxis of Tetanus.**—Supplementary to the usual antitetanus serum treatment, Arnd and Krumbein advocate copious use of phenol, either by the Baccelli subcutaneous injection method or by administration by the mouth of salol, or both. By this means the entire organism is kept under the influence of the phenol. Experiments on several dozen white mice showed that the Baccelli injections retarded and attenuated experimental tetanus. It is a simple and harmless matter, they declare, to take 1 gm. of salol every four to six hours after a wound in which tetanus is liable to develop. The animal experiments confirm the value of this as a preventive measure. Sahli has long advocated salol in treatment of tetanus.

Deutsches Archiv für klinische Medizin, Leipzig

CXVI, Nos. 5-6, pp. 437-615. Last indexed Jan. 2, p. 90

51 Favorable Effect of Caramelized Sugar on Normal and Diabetic Individuals. E. Grafe.
52 *Diseases of the Hypophysis and the Functional Diagnosis of Polyglandular Diseases. K. Csepai.

53 Clinical Electrocardiography. A. Weil.
54 Periods of Tension and Expulsion in the Heart's Systole. (Ueber die Anspannungszeit und Austreibungszeit des Herzens.) W. Weitz and Graner.
55 Extra-Intestinal Metabolism. (Zur Frage des parenteralen Stoffwechsels.) A. Dembicki and J. Löwy.
56 Influence of Infections on the Blood Picture in Anemia. (Zur Beeinflussung des anämischen Blutbildes durch Infektionen.) H. Pribram.
57 Causes of Heart Gallop Rhythm. M. Gubergritz.
58 Effect of Chronic Kidney Disease on Excretion. (Untersuchungen an Nierenkranken. II. Ueber die träge Einstellung der Sekretion bei Belastung.) H. Doll and R. Siebeck.
59 The Blood-Forming Cells in the Liver in Congenital Syphilis, with Special Reference to Lymphocytes and Plasma Cells. C. A. Müller.

52. **Disease of the Hypophysis.**—Csepai describes in detail three cases of acromegaly and two of adiposity plus genital dystrophy. In one of the cases of acromegaly there was an adenoma of the glandular part of the hypophysis, the histologic structure of which corresponded to the normal structure of the hypophysis. Among the other glands of internal secretion, marked pathologic changes were found in the thyroid, thymus and ovaries. In one of the cases of the dystrophia adiposo-genitalis there was an adenoma of the anterior part of the hypophysis. It showed an active tendency to spread and its structure was completely different from that of the normal hypophysis. The direct cause of the disease was apparently the degeneration of the pars intermedia of the hypophysis. The thymus, the parathyroids and the ovaries also showed pathologic changes. His research indicates that the cause of hypophyseal diabetes insipidus is hypofunctioning of the pars intermedia. This is shown by the fact that in one case injection of epinephrin caused a fall of 40 per cent. in the daily output of urine, and also by the fact, which has never yet been sufficiently emphasized, that diabetes insipidus is often combined with the syndrome of adiposity plus defective development of the genital organs. In all of the five cases there was leukopenia, with relative mononucleosis. In one of the cases of acromegaly there was also marked eosinophilia. In the first and second case of acromegaly, carbohydrate tolerance was very much decreased. In the other case of acromegaly and in the two of dystrophia adiposo-genitalis it was normal or increased. He suggests two new methods for functional diagnosis in disease of the ductless gland system: 1. The reaction of the conjunctiva to epinephrin. Under normal conditions three drops of 1 to 1,000 solutions of epinephrin cause a slight or moderate blanching of the conjunctiva that lasts for ten to twenty minutes. If, when the solution is instilled, the reaction is exaggerated, this indicates hypofunctioning of the epinephrin-producing system. 2. Study of the quantitative and qualitative blood changes after injection of epinephrin. Injected subcutaneously in a normal individual, epinephrin causes leukocytosis with increase of neutrophils and decrease in the number of eosinophils and mononuclears. If there is any variation from this effect it indicates disease of the ductless gland system. (Compare with editorial in THE JOURNAL, Dec. 2, 1911, p. 1840.)

Deutsche medizinische Wochenschrift, Berlin

December 3, XL, No. 49, pp. 2025-2052

60 War Injuries of the Visual Apparatus. (Verletzungen des Sehorganes im Kriege.) E. Hertel.
61 *Intestinal Disease Resembling Dysentery. (Ueber ruhrähnliche Darmerkrankungen.) E. Leschke.
62 Gunshot Wounds of the Calves. (Wadenschüsse.) E. Senger.
63 Some Common Errors in Treatment of Wounds. (Zur Wundbehandlung.) Link.
64 *To Prevent Inactivation of Diphtheria Antitoxin on Reinjection. (Die Schutzwirkung des Diphtherieserums bei der Reinjektion.) O. Hartoch and W. Schürmann.
65 Vaccine Diagnosis and Treatment of Gonorrhea. G. Stümpke.
66 *Bases for Treatment of Sleeping Sickness. (Grundlagen für eine Therapie der Schlafkrankheit.) E. Reichenow.
67 Improved Rulings for Blood-Count Chamber. (Meine Netzteilung für die Zählkammer.) N. Goriaew.

61. **Intestinal Disturbance Resembling Dysentery.**—Leschke reports eight typical cases to show that what seems to be true dysentery may prove on bacteriologic examination to be a harmless and transient intestinal trouble, not requiring isolation. He treats it with bed-rest, fluid and soft foods, moist heat to the abdomen, with or without some magnesium preparation, but the main reliance is on charcoal tablets which are taken frequently up to fifteen, twenty-five or more during the day. The finely pulverized charcoal, especially blood charcoal, absorbs the toxins and products of putrefaction, and in a few days as the stools become normal the ordinary diet can be resumed.

64. **Protective Action of Diphtheria Antitoxin on Reinjection.**—Hartoch and Schürmann treated guinea-pigs with both diphtheria antitoxin and toxin—aiming to induce conditions as in a case of human diphtheria given antitoxin treatment. Then as the animals were in a kind of sensitized condition, a subcutaneous injection of antitoxin was given and the blood tested for the amount of protection thus afforded. It was found from eight to thirty-two times less than in the previously untreated animals. At the same time, if the condition of anti-anaphylaxis is induced by subcutaneous injection of small doses, then the subcutaneous injection of antitoxin following confers the same protection as in the previously untreated animals. They think that these experiences explain why the second injection of antitoxin in the clinic sometimes has proved ineffectual. The most important lesson learned from them, however, is that Besredka's suggestion of preliminary subcutaneous injection of small doses of antitoxin not only protects against danger of anaphylaxis from reinjection but it also protects the antitoxin against being rapidly inactivated.

66. **Sleeping Sickness.**—Reichenow remarks that trypanosomiasis of the blood does not become sleeping sickness until the trypanosomes get into the cerebrospinal fluid. They can be reached by drugs when they are in the blood, but this is a more difficult matter when they are ensconced in the cerebrospinal fluid. He has been giving neosalvarsan in intraspinal injections, and also experimenting with alcohol which we know passes into the cerebrospinal fluid. The number of trypanosomes in the fluid markedly declined after the patients had taken by the mouth 200 gm. alcohol on three successive days. He never succeeded by this means, however, in clearing out all the trypanosomes from the fluid, but some drug may yet be found which diffuses into the fluid and will kill off all the trypanosomes.

Deutsche Zeitschrift für Chirurgie, Leipzig

November, CXXXII, Nos. 1-2, pp. 1-208

68 Tumors of Carotid Gland. H. Steindl.
69 Tumors at Base of Tongue. (Zur Kenntnis der Zungenbasisgeschwüre.) A. Wagner.
70 Clinical and Experimental Study of Hormonal and Neohormonal. G. Dencks.
71 *Stretching the Solar Plexus in Treatment of Gastric Crises. R. Leriche (Lyons).
72 *Stretching and Severing Perivascular Nerves in Various Painful Symptoms of Complex Arterial Origin and in Trophic Disturbances. R. Leriche.
73 *Aerophagia from Surgical Standpoint. R. Leriche.
74 Spontaneous Rupture of the Bladder. (Spontane Harnblasenzerreissung.) E. Moser.
75 Hemorrhage After Nephrotomy and Its Prevention. A. A. Tschaika.
76 Hygroma of the Semimembranous Bursa. B. Riedel.
77 Painful Ganglia in Tendons, Tendon Sheaths or Knee. B. Riedel.
78 Prehistoric Use of Charcoal and Sugar for Dressing Wounds. (Kohle und Zucker zur Verbandzwecken.) H. Schelenz.
79 Field Surgery. (Feldlazarettchirurgie.) L. Oelsner.
80 Indirect Fractures and Injury of Nerve Tissue in War. G. Perthes.
81 Solitary Cyst in the Kidney. N. Paus.

71-73. **Surgical Treatment of Gastric Crises, of Painful Arterial Affections and of Aerophagy.**—Practically the same articles as these by Leriche were summarized in these columns in the last volume, 1914, lxii, pages 971, 1203 and 1854. A foot-note to the articles states that they were received by the publishers of the *Zeitschrift* before Aug. 1, 1914.

Internationale Monatsschrift für Anatomie und Physiologie, Leipzig and Chicago

XXXI, Nos. 4-6, pp. 129-304

82 Comparative Anatomy of the Development of the Pituitary Body. (Sullo sviluppo del lobo ghiandolare dell'ipofisi negli Amnioti.) A. C. Bruni (Turin).

83 Human Embryo Consisting of Twenty Segments, in Extreme Dorsal Flexion. (Description d'un embryon humain (Eternod-Delaf), de 20 somites, avec flexion dorsale.) E. Bujard (Geneva).
84 The Vital Staining of Mitochondria with Janus Green and Diethylsafranin in Human Blood Cells. E. V. Cowdry (Baltimore).
85 The Nerve End Bulbs in the Papillae of the Skin. (Contributo allo studio delle espansioni nervose nel derma della cute umana.) F. Simonelli (Siena).

Medizinische Klinik, Berlin

December 6, X, No. 49, pp. 1755-1789

86 *Rheumatic Disease in the Field. A. Schmidt.
87 Wounds of the Eyes in War. (Augenverletzungen im Kriege und ihre Behandlung.) C. Adam.
88 Surgical Experiences in a Field Hospital. M. Strauss.
89 Epidemics in War. (Kriegsseuchen.) G. Joannovics. Commenced in No. 47.
90 Technic for and Clinical Importance of Examination of Conditions in Regard to Coagulation of the Blood. (Blutgerinnungsuntersuchungen.) W. Schultz.

86. **Rheumatism Among the Soldiers at the Front.**—Schmidt has had a number of cases of acute articular rheumatism, myalgia, neuralgia, etc., among the sick soldiers sent back home. In almost every instance he was able to learn of some preceding tonsillitis or rheumatic affection. In many cases of intestinal trouble or dysentery he has seen swelling of several joints, as also with suppurative colitis, demonstrating that the intestinal mucosa serves as a portal of entry for general infection more frequently than is ordinarily recognized. In other cases the joint swellings were evidently a symptom of septic conditions as the spleen was enlarged and there was high intermittent fever, with albuminuria and sometimes migrating pneumonia. The portal of entry here was evidently the gunshot wound, although this had healed in the interim. He learned further that from one-third to one-half of the rheumatism patients had already had attacks of rheumatism before the campaign. The legs are affected much more than the other joints and the men ascribe this, as well as the rheumatism in general, to the wet and cold in the trenches, but Schmidt thinks that the strain of the long marches is a more plausible explanation. In many cases an obstinate "rheumatic affection of the foot" turned out finally to be a "march fracture" of some metatarsal bone, or flat-foot derangement. His experience has continued to confirm the benefit liable from injection of salt solution or 0.5 per cent. solution of novocain. With myalgia, he makes the injection at the point where the pain is greatest. With neuralgia, at the point most sensitive to pressure; with more diffuse pain, as with bilateral sciatica, severe lumbago or migrating myalgias, the injections should be given by the epidural or lumbar intraspinal technic.

Therapie der Gegenwart, Berlin

December, LV, No. 12, pp. 457-482

91 *Inflammation of the Mucosa of the Mouth. (Mundschleimhautentzündungen.) F. Williger.
92 *Treatment of Chronic Constipation. (Obstipation.) G. Rosenfeld.
93 Cure of Inflammatory Pelvic Tumors by Weak Galvanic Current. (Ueber Heilung entzündlicher Beckentumoren mittels galvanischer Schwachströme.) H. Schmidt.

91. **Inflammation of the Mucosa of the Mouth.**—Williger devotes a word in passing to the amazing resisting power of the lining of the mouth, in such marked contrast to mucosa elsewhere. But when there is damage from a broken tooth or general febrile disease, the secondary stomatitis that may develop is depressing and measures to cure it are imperatively needed and give great relief. Even when there is no actual inflammation, proper care of the mouth may ward off secondary parotitis, besides its effect on the appetite and spirits. Not only the teeth, but the gums and tongue must be wiped off with the finger wrapped in a thin layer of cotton. The best way, he says, is to cut a piece about 4 by 10 cm. out of sheet cotton and then peel off a very thin layer to wrap around the finger, and dip the finger in a mouth wash. By using plenty of the fluid the mouth can be thoroughly cleansed without hurting. The patient can do this himself when perseveringly trained until he does it right. Three times a day is as often as it should be done, merely rinsing out the mouth after eating at other times. He regards it as the criterion for good nursing when the patient's mouth is found clean at the doctor's visit. With contagious diseases a wad of cotton held with forceps must be used instead of the finger. The mouth wash must be such as softens up rapidly phlegm and thick coatings, and nothing seems to be better for this than a heaping teaspoonful of sodium bicarbonate stirred into a glass of warm water, supplemented by hydrogen dioxid not stronger than a teaspoonful of the latter to a glass of warm water. Medicated chewing gum also promotes the natural self-cleansing of the mouth. He emphasizes that before beginning mercurial treatment the teeth should be put in good order and all tartar removed.

Ulcerative stomatitis he treats by swabbing with undiluted hydrogen dioxid, repeating this until the fetor has disappeared. The tartar is then removed, not too forcibly, and then the ulcerations are swabbed and rubbed quickly with an 8 per cent. solution of zinc chlorid. The patient rinses his mouth every hour with the warm, weak hydrogen dioxid solution, and cleans out the mouth besides three times a day with the cotton-wrapped finger. Then the rest of the tartar is removed and by the third day the ulcers are healing and by the end of a week the cure is complete. Instead of the zinc chlorid, a mixture may be used consisting of a little iodoform and a few drops of alcohol with enough of an 80 per cent. solution of lactic acid to make a thin paste. The tooth brush hitherto used must be burned. Aphthous stomatitis requires just the reverse—avoidance of every irritating substance, and merely warm sodium bicarbonate or boric-acid solutions to hold in the mouth for five minutes, the mouth thus rinsed out six times a day. The aphthae can be touched with 3 per cent. boric-acid glycerin; children like this. Drug stomatitis may range from simple edema to blisters and necrotic patches. It requires mild treatment.

92. **Chronic Constipation.**—Rosenfeld has been remarkably successful in curing constipation of years' standing by simple dieting and having the patient stay alone in his room for a day or two, all visitors excluded, and go frequently to the water closet, not waiting for desires. The aim is to train the patient to become aware of and heed the faintest impulses toward defecation. This will bring his bowels under his control again. The simple oatmeal, rice, cocoa and chocolate diet, no meat, butter, milk, fruit or vegetables, is kept up for three or four days. Then to this is added a little poultry or boiled ham for two days; then the same plus roast fowl for two days; then the same plus boiled cream by the tablespoonful, and the sixth menu adds boiled cream by the cupful. This diet outline is the typical antidiarrhea diet, but it seems to regulate conditions just as well in the constipated. The dieting course lasts two or three weeks, finally including cauliflower and asparagus, then spinach, potatoes and green peas, with fruit the last to be resumed.

Zeitschrift für Geburtshülfe und Gynäkologie, Stuttgart

LXXVI, No. 2, pp. 321-676. Last indexed July 18, 1914, p. 285

94 The Innervation of the Ovaries. (Studien über die Nerven des Eierstocks mit bes. Berücksichtigung der interstitiellen Drüse.) J. Wallart.
95 *Umbilical and Postoperative Hernia. (Die Operation von Nabel- und Bauchnarbenbrüchen mit querer Fascienspaltung und Muskelaushülsung.) A. Schottelius.
96 *Ligation of Vena Cava in Puerperal Pyemia. F. Fromme.
97 Extra-Uterine Pregnancy at Term; Fetus Long Dead. P. Werner.
98 Myomas of Cervix of the Uterus. B. Novogrodsky.
99 *Functional Disturbances in Female Genitals and Disturbances in Vegetative Nervous System. E. Mosbacher.
100 Capacity of Women for Lactation. (Zur Frage der Stillfähigkeit.) G. Krosz.
101 Anaphylaxis in Relation to Pregnancy. M. Bolaffio.
102 *Early Diagnosis of Pregnancy by the Proteolytic Ferment in the Serum. (Zur Schwangerschafts-Diagnose mittels des Antitrypsinverfahrens.) S. Adachi.
103 *Behavior of the Proteolytic Ferments of the Leukocytes in Pregnancy, in Puerperal Fever and with Tumors of Female Genital Organs. G. Lohmeyer.
104 Determination of Sex of Fetus. (Ueber Geschlechtsbestimmung beim Menschen.) H. Poll. (Das konstitutionelle Moment beim Geschlechtsproblem.) Kuntzsch.

95. **Treatment of Umbilical and Postoperative Hernia.**—Schottelius has applied the Menge-Pfannenstiel technic in 11 cases, as he describes in detail, with illustrations. The

special features of it are the transverse section of the fascia and the freeing of the muscle until it is mobilized enough to suture the lips together. Favorable results with it are being reported from various quarters. Menge has applied it in 75 cases with no fatalities since the very first, when he lost three patients. Recurrence has never yet been observed. Schottelius' last patient succumbed soon after the operation to pneumonia and heart weakness. There was no actual hernia in this case, but the rectus muscles gaped far apart and the huge pendulous abdomen between caused intense discomfort. The reduction of the abdominal contents was a difficult matter, and this crowding of the bowel back inside evidently contributed to the fatal outcome. The case teaches the necessity for a preliminary systematic effort to reduce the abdominal content and accustom the heart and lungs to the altered conditions of pressure before attempting the operation on the abdominal wall.

96. **Ligation of Vena Cava with Puerperal Pyemia.**—In the case reported by Fromme a woman of 24 aborted at the third month of her second pregnancy. After the uterus had been cleared out, febrile puerperal endometritis followed for nearly two weeks and then came four afebrile days. Thrombosis in the right pelvic vessels then developed, with thirty-eight chills during the nearly three weeks of this phase. The vena cava was then ligated, and there were no further chills for nine days although the patient had developed pneumonia. Then came a new pyemic phase with twenty-one chills, with death the third week. Necropsy disclosed that if, besides the vena cava, the sound common iliac vein had had a ligature thrown around it too, just before it entered the vena cava, this would certainly have shut off the region of the thrombosis from the rest of the circulation. The thrombosis had involved the common iliac vein although it was evidently sound at the time the vena cava had been ligated. The case demonstrates the feasibility of ligating the vena cava, and that it is a comparatively simple operation.

99. **Functional Gynecologic Disturbances.**—Mosbacher tabulates under nine headings the details of ninety cases of various disturbances in the genital sphere, all of purely nervous origin. He classifies them in seven groups, those with pure painful menstruation, those with leukorrhea with or without dysmenorrhea, those with nervous exhaustion or neuralgia or smarting at micturition, tenesmus or sacral pain, four cases of amenorrhea, six of climacteric disturbance, and twenty-five of merely functional uterine hemorrhage. All organic causes had been painstakingly excluded. All the patients exhibited numerous signs of abnormal excitability on the part of the vagus or sympathetic nervous system. Most of them presented an intense reaction to subcutaneous injection of 1 c.c. of 1 per cent. pilocarpin, and only comparatively few developed glycosuria under the influence of 1 c.c. of 1 to 1,000 epinephrin. The patients further all had their vitality depressed by sorrow or worry—in some cases dread of a pregnancy—or they were women inclined to psychoneuroses.

102. **Early Diagnosis of Pregnancy by the Antitrypsin Test.**—Adachi obtained a positive response with 97 per cent. of the thirty pregnant women examined. He used Rosenthal's method of "antitrypsin titration."

103. **The Proteolytic Ferment Test of Pregnancy and Gynecologic Disease.**—Lohmeyer's tests for the proteolytic ferment confirmed its constant presence in pregnancy and for two weeks after delivery. The proteolytic power of the leukocyte ferment is increased in all febrile conditions and also with cancer, tuberculosis, and suppurative processes of all kinds. Positive findings are the digesting of the culture medium on a Löffler plate when droplets of blood are placed on the plate. The resulting dimples in the Löffler plate coating demonstrate the activity of the proteolytic ferment, according to Müller and Jochmann who introduced this test.

Zentralblatt für Gynäkologie, Leipzig

December 5, XXXVIII, No. 49, pp. 1465-1480

105 *Retention of Scraps of the Placenta. (Behandlung retinierter Placentarreste.) O. Hoehne.

105. **Retention of Scraps of Placenta.**—Hoehne relates 29 cases of this kind from the Kiel clinic in the last seventeen years, the delivery at term. In 6 the gap in the placenta was recognized at once, and the part left behind was immediately extracted. The hemorrhage was promptly arrested and the involution of the uterus proceeded normally. In 8 other cases the placenta seemed to be whole although part had been retained. It was expelled spontaneously in 3 cases within eleven days, with transient fever in 2. In 5 cases continuous or sudden hemorrhage attracted attention to the retained scrap, within one to nearly eleven weeks after delivery. Febrile endometritis followed in only one case. Of the 15 women brought to the hospital not until after delivery, 7 with retained scraps had fever and one thrombosis. Two died in this group. These experiences emphasize anew, he reiterates, the importance of detecting any defect in the placenta and the necessity for extraction at once after delivery of any scraps that may be retained.

If the placenta seems complete, any unusual loss of blood, with delay in involution or gaping cervix, should warn of a retained scrap and call for immediate clearing out of the uterus. When fever is already installed, he advises to wait unless there is much bleeding. The waiting time can be utilized for bacteriologic control; the greater the virulence of the germs found, the more necessity for caution and conservative measures. If active treatment is indispensable, sharp instruments should not be used but the uterus should be thoroughly cleared out. Fever, fetid lochia and defective involution alone are never an indication for digital examination of the puerperal uterus; only a profuse hemorrhage calls for this. If the puerperal infection has spread beyond the uterus and there are profuse hemorrages, it might be better to consider removal of the entire uterus, with or without ligation of veins, protecting the peritoneum by preliminary stimulation before the operation.

Gazzetta degli Ospedali e delle Cliniche, Milan

December 6, XXXI, No. 132, pp. 2037-2052

106 Aleukemic Myelosis from Clinical Standpoint. G. Ghedini.
107 Apparatus for Study of the Hearing Capacity. (Nuovo sonometro per lo studio di fenomeni acustici.) S. Salaghi.

December 10, No. 133, pp. 2053-2068

108 *The Urochromogen Reaction in the Urine. (Sul valore semeiologico del permanganato di potassio nelle orine—Reazione di Moritz Weisz.) A. Balduzzi and A. Ballero.

December 13, No. 134, pp. 2069-2084

109 Sterility in Women. L. Dozzi.
110 Alcoholic Extract of Beef Tonsils Alleged Superior Antigen for the Wassermann Reaction. A. Vattuone.

108. **The Urochromogen Reaction.**—Balduzzi and Ballero report considerable research with the Moritz Weisz potassium permanganate test applied to the urine. They obtained a positive reaction in 23 and a negative in 100 examinations of the urine of 113 scrofulous children, the sexes about equally divided. The reaction was positive in 10 tuberculous adults, but it was also positive in 25 of 43 non-tuberculous affections including cases of echinococcus or pneumococcus disease, cholelithiasis, acute articular rheumatism, malaria and Malta fever. The reaction is thus not restricted to tuberculosis. They explain it as due to albuminoid putrefaction with elimination of the products oxidized from the indican generated wherever there is putrefaction of albuminoids. This assumption explains the apparently capricious occurrence of the reaction; it is positive when there is fever or the oxidation processes are increased from any cause. It is thus of frequent occurrence in tuberculosis while it is absent in the healthy and with torpid lesions. The test is merely the addition of three drops of a 1 per thousand solution of potassium permanganate to one of two test-tubes, both half full of a mixture of urine with two parts of water. If the reaction is negative, there is no appreciable change in tint. With a positive reaction, the fluid turns a distinct yellow. With a negative response he repeats the test with urine diluted one-half with water. A persisting pronounced reaction is an unfavorable sign. The alternation of positive to negative responses corresponds to phases of improvement and aggravation in the clinical condition, especially with pulmonary tuberculosis.

Policlinico, Rome

December 6, XXI, No. 49, pp. 1705-1740

111 *Familial Tuberculous Laryngitis. G. Bilancioni.

December 13, No. 50, pp. 1741-1776

112 *Enlargement of the Stomach as Early Sign of Ileus. (Di un sintoma importante—gastroectasia—per la diagnosi precoce dell'occlusione intestinale.) P. Cataldi.

113 *Means to Influence Growth and Function of the Thymus. (Nuovo metodo per lo studio dell'evoluzione e delle funzioni del timo.) G. Sabatini.

November, Surgical Section, No. 11, pp. 509-556

114 *Tuberculosis of the Kidney; Seven Cases. P. Marogna.

115 *Filling Operations. (Di una eccezionale indicazione alla impiombatura per la guarigione di una lesione suppurativa della tiroide e dell'uso della impiombatura nella moderna chirurgia.) I. Scalone. Commenced in No. 9.

116 Fever After Ovariectomy. P. Azara.

117 Adenomas of the Sweat Glands. (Adenomi delle ghiandole sudoripare.) G. Frattin.

111. **Familial Laryngeal Tuberculosis.**—Bilancioni has noticed that certain families seem to display a special susceptibility to tuberculosis and, in particular, that certain organs seem to be predominantly affected in certain families. This special topography of tuberculosis in such families may be due to inherited characteristics or to the special environment in the family. He relates the details of three families in which two brothers or two sisters presented tuberculous laryngitis as the earliest and in one instance long the exclusive clinical manifestation of tuberculosis. The patients were 21 and 23, 9 and 11. In the third family two brothers and the son of one all had pulmonary tuberculosis accompanied by lesions in the larynx so severe that the father and son soon died from inanition owing to the progress of the throat trouble.

112. **Enlargement of Stomach as Early Sign of Ileus.**—It is not always that a case of ileus presents the four unmistakable symptoms of obstruction of the intestines, namely, abdominal pain, tympany, fecaloid vomiting and complete retention of feces and flatus. Before all of these are apparent it may be possible to diagnose the ileus by merely the abdominal pain and tympany, vomiting, small and rapid pulse and pronounced dilatation of the stomach. The acceleration of the pulse may be the result of reflex action from irritation of the abdominal sympathetic. This may also be the explanation of the dilatation of the stomach which occurs early in such cases and which is of great differential importance. He describes in detail four cases in which this gastrectasia was the only symptom which seemed to exclude other affections and pointed to ileus as the cause of the disturbances noted. The patients were adults between 33 and 58, and the large stomach protruded as the patients reclined. In some of the cases the bowels had moved up to twenty-four hours previously, and appendicitis seemed more probable than ileus, but the course of each case confirmed the reliability of the gastrectasia as a sign of ileus.

113. **Means to Influence Growth and Functioning of the Thymus.**—Sabatini reviews some recent research by Fiore and Franchetti in which they apparently have demonstrated that it is possible to accelerate the involution of the thymus by injecting serum from adults of the same species, and also to accelerate the growth and postpone involution by injecting the serum from young of the same species. The adult serum, they argued, must contain substances favoring involution, while the serum from the immature must contain substances with the opposite action, and their experiments on laboratory animals apparently confirmed this view.

114. **Tuberculosis of the Kidney.**—Marogna's patients were between 20 and 36 except one man of 46. There were evidences of some focus elsewhere in every case. Unduly frequent passage of urine at night was the first and most constant symptom in all, long preceding any sensation of pain. The pollakiuria developed into incontinence in some of the cases, both at first only at night, and later also during the day. There was slight hematuria in only three cases. The symptoms from the secondary cystitis were what brought the patients to the doctor at first. The history of some of these cases shows anew how practitioners are too apt to regard the cystitis as the primary, or at least the main trouble, and overlook the kidney affection.

115. **Cavity in Thyroid Plugged with Iodoform Filling.**—Scalone's patient was a woman of 56 who had had the thyroid enlarge at times during her earlier pregnancies but it always returned to normal size afterward. At about the age of 50, during convalescence from typhoid, there was extensive suppuration in the thyroid and a fistula was left which refused to heal and caused great discomfort. After six years of this, Scalone operated on the still discharging fistula and found that it led into a large cavity with calcified walls. Attempts to clear away the lime deposits caused such pain and disturbance in neighboring organs that they had to be abandoned. After sterilizing the cavity with iodin, he injected about 25 c.c. of the Mosetig iodoform filling, and sutured the mobilized skin to cover the opening. At first some scraps of the filling were cast off, but then everything healed smoothly and the patient was cured of all trouble from this source. In connection with this case he reviews the literature on the subject of iodoform fillings, paraffin fillings, Beck's bismuth paste, and adipose tissue used as filling for cavities in bones and to compress the lung (Tuffier's extrapleural filling), quoting the details of about thirty-five cases in which these various technics have been applied.

Riforma Medica, Naples

November 28, XXX, No. 48, pp. 1317-1344

118 Action of Colloidal Manganese on the Resisting Powers. (L'azione dell' ossidasolo sui poteri di resistenza dell' organismo.) L. Fernannini. Commenced in No. 47.

119 *Pathogenesis of Leukemia. C. Martelli. Commenced in No. 47.

December 5, No. 49, pp. 1345-1372

120 Direct Action of Nicotin and Tobacco on Motor Functioning and Tonicity of the Intestines. E. Tedeschi.

121 Failure of Attempts to Induce Experimental Proteus Osteomyelitis. G. Marsiglia.

122 Pathogenesis of Hysteria. (L'isterismo.) A. Salmon.

December 12, No. 50, pp. 1373-1400

123 *Indications for Artificial Pneumothorax from New Standpoint. P. E. Livierato.

124 Pathogenesis of Tetany of Parathyroid Origin in Children. A. Pepere.

125 Nitrogen Has Special Action of Its Own in Artificial Pneumothorax. (Sullo speciale meccanismo d'azione dell'azoto nel pneumotorace artificiale.) A. Cantani and G. Arena.

119. **Leukemia.**—Martelli records the details of twelve cases of leukemic myelosis, five of leukemic lymphosis, two of leukanemia and five of what he calls preleukemia, comparing the findings and previous history. He inoculated numbers of laboratory animals with blood and tissues from the patients but never succeeded in reproducing any affection resembling the original leukemia, etc. These negative results and the fact that contagion is not known or any focus where the disease is prevalent, all speak against the assumption of a specific germ for it. On the other hand, in nearly every one of his cases there was a history of some preceding infection or the patient was in a septicemic condition. Tuberculosis, syphilis, malaria, streptococcus or staphylococcus affections were known in most of the cases. There was also a predisposition evident in most, manifested by adenoids, unstable nervous system, or defective development. An additional factor was evident in some cases from a trauma, overfrequent pregnancies, etc. An ordinary toxic infectious affection occurring in the predisposed may lead to the changes characteristic of leukemia. Treatment and prevention should aim to restore normal conditions throughout, and thus counteract the tendency to abnormal metaplasia of the tissues involved. Benzol and Roentgen treatment do not act on the cause.

123. **Indications for Artificial Pneumothorax from New Standpoint.**—Livierato cites numerous instances of benefit from bilateral pneumothorax even when the lungs were compressed very slightly and the intrathoracic pressure was persistently negative. Analysis of these cases shows that the benefit must have been from the interruption of the lymph current from the lungs to the pleura, thus cutting off the passage of toxic substances from the lungs into the blood. Still another factor in the benefit is the resulting damming up of the lymph in the lung which causes a number of biologic and pathologic-anatomic changes. From this point of view, artificial pneumothorax need not be restricted to uni-

lateral cases nor to foci with cavities. It offers a chance to benefit even the extensive cases, involving both lungs, if the affection is not very intense or destructive. The aim in such cases is not to compress and cause the collapse of the lung, but merely to interpose a layer of gas between the sheets of the pleura and interrupt the circulation of lymph and dam it up in the lung. The lymph thus backing up in the lung acts by a kind of autoserotherapy, modifying the virulence of the germs or at least rendering the environment less favorable for their development. The damming up of pus and other toxic substances aids in this, and the fact that these substances are thus kept out of the blood explains the subsidence of the symptoms of the toxemia. The procedure has been extensively applied in this way in his service at Genoa, and the results have been encouraging, but the interval since has not been long enough for a decisive judgment.

Brazil-Medico, Rio de Janciro

October 22, XXVIII, No. 40, pp. 373-380

126 Mycosis of the Lungs Caused by Oidium brasiliense. H. O. Magalhães.
127 Experimental Infection with the Protozoon, "Toxoplasma." H. J. B. Arantes.

November 8, No. 42, pp. 389-396

128 *Improved Electric Treatment of Aneurysms. (Sobre uma modificação do chamado methodo brazileiro de tratamento das aortasias.) P. Valladares.
129 False Tabes Dorsalis of Malarial Origin. A. A. Da Matta. Commenced in No. 41. Concluded in No. 44.
130 Color Test for Syphilis. (Reação de Landau; Novo meio de diagnosticar a syphilis.) G. A. Correa.

November 15, No. 43, pp. 397-404

131 *Case of Apoplectiform Myelitis. A. Britto.

128. **Electric Treatment of Aneurysms.**—Valladares has somewhat modified the so-called Brazilian method of treating aneurysms by application of the positive pole of a continuous or galvanic current. Instead of relying exclusively on the coagulating action of the positive pole, he enhances the action of the electricity by magnifying the interpolar transcutaneous voltaisation, as he calls it. Both electrodes should be of the same size and as large as the aneurysm to be treated. The electrodes can be changed about so that the skin does not suffer at any point from too long application. As the electrodes are of equal size, this permits the use of stronger currents. Electric treatment of aneurysms is regarded as a triumph of Brazilian medicine, and it is hoped that this modification of it will deprive it of all its previous drawbacks.

131. **Apoplectiform Myelitis.**—In Britto's case a man of 50 with a history of syphilis began to experience pain in the spine and after a few days there was sudden and total paralysis of the legs but no flaccid paralysis. The spine was painted with tincture of iodin, while vigorous mercurial treatment was instituted and by the fifth day the man was taking a few steps and soon was able to return to business.

Nederlandsch Tijdschrift voor Geneeskunde, Amsterdam

II, No. 6, pp. 381-428

132 Life Prolonged by Intratracheal Insufflation in a Case of Cerebellar Tumor. A. A. H. van der Bergh and E. D. Wiersma.
133 Intravenous Injection of Concentrated Solutions of Neosalvarsan. J. van Assen.

No. 7, pp. 429-476

134 *The Skin Tuberculin Reaction with Human and with Bovine Tuberculin. C. de Lange.

No. 8, pp. 477-524

135 Chronic Cystic Mastitis. E. H. van Lier.

No. 9, pp. 525-588

136 Salvarsan in Treatment of Syphilis. A. H. M. E. Lommen. Concluded in No. 10.
137 Cystic Tumors of the Frontal Lobes; Four Cases. (Cystomen der voorhoofdshersenen.) G. C. Bolten.

134. **Skin Tuberculin Reaction with Human and Bovine Tuberculin.**—De Lange reviews the more important literature on this subject and reports her own experience in 150 cases. She thinks that only by combining the two tests do we get a reliable insight into conditions in children. Her experience at the large Emma Children's Sanatorium indicates further that pulmonary tuberculosis is not so prevalent among children as many imagine. Numbers of cases diagnosed as such are in reality cases of chronic pneumococcus infection, and it is cases of this kind that form the majority of those in which the children recover when living an out-of-door life. The course of chronic pneumococcus infection of this kind is generally favorable in the long run, except as it may render the children more susceptible to tuberculosis. (Another article on comparative human and bovine tuberculin tests was reviewed in these columns June 13, 1914, p. 1932.)

Russky Vratch, Petrograd

July 18, XIII, No. 27, pp. 933-964

138 Pasteur Treatment in Epilepsy; Benefit in Four Cases. M. P. Nikitin.
139 Torsion of the Pedicle of the Floating Spleen. I. T. Kozloff. Commenced in No. 24.
140 *Comparison of Various Methods of Staining the Treponema Pallidum. N. I. Drosdova.
141 Post-Mortem Findings in Adult Dwarf. M. S. Davidoff.
142 *Stab Wound of Pregnant Uterus. V. L. Brown.

140. **Staining Technic for the Treponema Pallidum.**—Drosdova has been testing and comparing eighteen different methods of staining spirochetes. In her judgment, the Giemsa two-minute stain and Reitman's method, slightly modified, are superior to all others. With the latter, after fixation for ten minutes in absolute alcohol, the specimen is acted on by 2 per cent. phosphotungstic acid for two minutes. This is then washed off with water and alcohol, as with the original Reitman method.

142. **Stab Wound of Pregnant Uterus.**—In Brown's case the nine-months pregnant uterus had been stabbed with a knife. The wound was two inches wide, and through it the membranes of the fetus could be seen. Brown decided to abstain from cesarean section and closed up the wound with interrupted silk sutures. In spite of the fact that six hours later labor began, with delivery in five hours, there were no complications on the part of the uterus and the patient was discharged eleven days later in perfect condition.

Hospitalstidende, Copenhagen

December 9, LVII, No. 49, pp. 1441-1464

143 *Recovery After Removal of Spinal-Cord Tumor. (Et Tilfælde af Rygmarvstumor med Operation.) H. Lind and I. Svindt.

December 16, No. 50, pp. 1465-1488

144 *Solitary Blood Cyst in the Kidney with Hematuria. (Om solitære Blodcyster i Nyrerne med Hæmaturi.) O. Wulff.

143. **Spinal Cord Tumor.**—The patient was a man of 66 previously healthy except for three attacks of acute articular rheumatism. In September, 1913, he began to experience severe pain radiating into the left side from the spine, and his legs gave way under him and there was a little incontinence of the sphincters. By the fifth month he was unable to move his legs; the tendon reflexes were exaggerated and there was some contracture, but the spine was not tender. Lumbar puncture showed considerable pressure, opalescence and positive Nonne-Apelt in the fluid, but no lymphocytosis, and there was no sensation below the umbilicus. The dura was opened and an ovoid fibro-endothelioma an inch long was found on the right side at the eighth and ninth dorsal vertebral arches. It was adherent to both cord and dura, but the cord seemed normal otherwise except for being compressed, and the man's recovery since the tumor was shelled out has been remarkable. He walks with a cane but can go up and down stairs. The cicatrix is not tender, there is no paresthesia in the feet, and sphincter functioning is normal.

144. **Solitary Blood Cyst in the Kidney with Hematuria.**—Two men, 32 and 34, noticed blood in the urine, but there were no pains and no disturbances in urination. The hematuria kept up profuse for a week although the men stayed in bed. They felt somewhat weak but nothing objective could be found to explain the hematuria. One of the men had had gonorrhea eight years before. The other had no morbid antecedents except pneumonia at 11 and 23. The blood came from the right kidney in both cases, and on suspicion of malignant disease the kidney was removed in each. Even after the kidney had been exposed it was impossible to

exclude cancer, and consequently the organ was removed. In both cases the trouble was found to be a single benign cyst filled with blood. There are only a little over sixty cases of a solitary cyst in the kidney on record, and only fourteen in which the cysts contained blood, and of these only a few were accompanied by hematuria. Most of the cases of solitary kidney cysts were in children. This renders the more remarkable the fact that Wulff's two cases were in young men and were encountered within four months of each other. The hematuria also was much more severe than in other cases on record, compelling early operative treatment to save the men's lives. In both cases the cyst was in the upper pole of the kidney and the size of a walnut. It lay so deep that resection was out of the question.

Hygiea, Stockholm

LXXVI, No. 21, pp. 1201-1248

145 *Hernia, Industrial Accidents and Workmen's Compensation. (Om bråck och olycksfall.) J. Akerman.

146 Experimental Research on Heat Puncture. (Värmesticket.) G. Liljestrand.

No. 22, pp. 1249-1311

147 Mental Disease and Internal Secretion. (Sinnessjukdomarna och den inre sekretionen.) B. Gadelius.

145. **Hernia and Workmen's Compensation.**—The companies in Sweden insuring against accidents have been distributing since 1908 a question-blank to physicians to be filled out for each case of hernia claimed to be the result of an industrial or other accident. The question-blank states that 5 kronor, a little over a dollar, will be paid for each blank authentically filled out and received by the central office, a cheque to be sent each quarter to the physicians who have thus contributed. The question blank is reproduced here; there are about seventeen questions to be answered. Akerman states that about 170 workmen applied to the authorities for compensation for hernia, which they claimed was the result of an industrial accident, during the last six years. Their application was rejected in 56 cases; 80 were given free operative treatment and sickness indemnity; 26 were awarded compensation for disability, but only 8 were indemnified for permanent disability. During this period about 600,000 workmen were insured, and about 25,000 operations for hernia were performed in the public hospitals in the country.

The data collected, and increasing experience have demonstrated that hernia is of three types, the first of which is hernia from direct violence. This is so rare as scarcely to be taken into account. The second type is hernia from strain, the typical traumatic industrial hernia; the third type is constitutional hernia, a slowly developing and late appearing deformity; he calls this "hernia malady." He declares that it is impossible to decide, without an operation, to which of these groups the hernia belongs. Hence he urges great liberality in respect to the expense of an operation. If the hernia is of the first type, workmen's compensation should always be granted, but not if it is of the third type, the "hernia malady." Among the hernias of the second type, some will be found conferring permanent disability for which the industrial accident was responsible, but the majority will show conditions which exonerate the accident. When an indemnity was allowed, it ranged from 10 to 20 per cent. of the previous wages, an average of 15 per cent. Akerman's own view is that great reserve is necessary in awarding indemnities for permanent disability from hernia, but that, on the other hand, means should be provided generously for operative treatment in all cases, even if it proves merely an exploratory operation.

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November 26, LXXVI, No. 48, pp. 2039-2068

148 Plague in Denmark About 1600. (Johan Warwichs danske Pestbog.) J. W. S. Johnsson.

149 Tuberculous Children and the School. (Om Undervisning af tuberkuløse Born.) K. Lundh.

December 3, No. 49, pp. 2069-2116

150 Internal Secretion During Pregnancy. (Den interne Sekretion Under Svangerskabet.) S. A. Gammeltoft.

151 Familial Hemophilia. A. Arnold-Larsen.

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September, XIX, No. 4, pp. 217-279. Last indexed May 2, 1914, p. 1444

152 Occurrence of Bromin, in Organic Compounds, Through the Animal Kingdom. (Om förekomsten af brom, i organisk bindning, inom djurvärlden.) C. T. Mörner.

153 Research on Parthogenesis in Vertebrates. (Några nyare undersökningar öfver partenogenetisk utveckling af ägg från ryggradsdjur.) E. L. Backman.

154 Passage of Alcohol into the Urine. (Om alkoholens öfvergång i urinen.) (Om en enkel, kliniskt användbar metod for diagnosticering af alkoholförekomst i kroppen.) E. M. P. Widmark.

155 Visual Fixation of Moving Object. (Försök att bestämma noggrannheten af vår fixation af rörliga föremål.) P. T. Bjorck.

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156 *Calcium Treatment of Glandular Tuberculosis. (Några röntgenologiska och kliniska iakttagelser vid kalkbehandling af bronkialkörteltuberkulose.) A. Wersen.

157 *Cysts in the Bladder. (Zysten in der Harnblase.) Ekehorn.

158 Importance for Vision of Indirect Seeing. (Om blickrörelsen och det indirekta seendets betydelse för blickningen.) C. G. Sundberg.

159 Importance of Hypotonic Medium for Respiration of Oxygen by Marine Animals. (Om det hypotoniska mediets inverkan på Se'achiernas syrgasandning.) E. L. Backman.

160 Means to Estimate Size of Cortex and Medulla of the Thymus, and Number of Hassall's Bodies. (Methode, die Menge der Rinde und des Marks der Thymus sowie die Anzahl und Grösse der Hassallchen Körper zahlenmässig festzustellen.) J. A. Hammar.

156. **Lime in Treatment of Tuberculous Bronchial Glands.**—Wersen administered calcium lactate systematically to twenty children with tuberculous processes in the bronchial glands and examined them repeatedly with the Roentgen rays, as also twenty other children with approximately the same findings in the bronchial glands, but who were not given lime in any form. About 6 to 12 gm. of the calcium lactate were given during the day for two months and the glands showed calcification in 8 cases and possibly also in 4 more, while the control cases examined over a period of seven months showed evidences of calcification in only 1 and possibly in a second case. The shadow of the hilus became more distinct also in 12 of the lime-treated children and possibly in an additional 2, while among the control children this occurred in only 2 instances. This clearing up of the shadow may be the result of healing of the tuberculous process or possibly of the direct action of the lime on inflammatory changes in the hilus. The clinical symptoms also improved materially in the lime-treated children and none seemed to have been injured in any way by these large doses of lime. It seemed to act just as well alone as when combined with cod liver oil or sodium tartrate, as was done in some cases. In 2 long febrile cases, the fever subsided almost at once after the lime treatment had been started, without any other change in the treatment.

157. **Bladder Cyst Preventing Voiding of Bladder.**—Ekehorn relates the case of a farmer of 54 who entered the hospital on account of complete retention of urine. The case seemed to be of the ordinary type of prostatic retention, although the prostate was not palpable, and the bladder was opened by a suprapubic incision. No attempt at cystoscopy had been made, as no difficulty had been experienced with catheterization. On opening the bladder the whole trouble was found to be a small, round tumor on a long stem, growing near the mouth of the urethra. This tumor had dropped into the funnel opening of the urethra and thus obstructed it like a ball valve. It was easily pushed aside by the tip of the catheter and consequently offered no obstacle to catheterization. It was then learned that the man had been in the hospital for the same trouble twice before, in 1910 and 1911. Each time the retention came suddenly and for four days the man was unable to emit a drop of urine although catheterization proceeded without difficulty. Then the ability to void the urine returned as suddenly and as completely as before, and there was no further disturbance for another year. The cyst must have been burst by the catheter; as soon as it collapsed there was no further obstruction until the cyst grew again and again started its valve action. The urine at all times had been normal and there were no evidences of cystitis. Ekehorn compares with this the cases of bladder cysts on record. In one case the pedicle was so long that the cyst appeared in the vulva of the little girl.